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ABSTRACT

The purpose of this study of Ohio's system of public higher education was to review each institution in terms of its management, organization, and administrative practices, and recommend needed improvements. With this as a basis, the management and coordination of the overall system was to be evaluated. The report is presented in four major sections. The first contains a brief description of background factors including: the system as it is today, population trends, today's resources, and tomorrow's needs. The second section discusses the system as a whole and delineates improvements required to ensure appropriate management and coordination at the state level. The third section is a composite presentation of findings and recommendations regarding individual universities. It includes data on their organization, planning, space utilization, registration, financial management, systems and data processing, auxiliary enterprises, personnel, purchasing, library, and plant operation and maintenance. The last section covers two-year institutions, addresses their interface with the system, and suggests improvements for the management of their resources. Organization charts of Ohio's universities are included in the appendix. (AF)

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MANAGEMENT
STUDY AND ANALYSIS
OHIO PUBLIC HIGHER EDUCATION

WARREN KING AND ASSOCIATES, INC.—CONSULTANTS TO MANAGEMENT—CHICAGO

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Joint Legislative Committee to Review
the Administration of Education in Ohio
Ohio House of Representatives
State House
Columbus, Ohio 43215

Gentlemen:

We are pleased to submit this final report documenting the results of a comprehensive management study of Ohio's system of public higher education. The project was conducted at the request of the Education Review Committee in conjunction with the Department of Finance.

Public higher education in Ohio has accomplished a remarkable task in successfully meeting its primary mission of providing the highest quality instruction for a rapidly growing student enrollment. In achieving this goal, it was believed undue stress was placed on existing management systems. Therefore, this review seemed appropriate. The objective was to determine how the management and administration of each institution as well as the system as a whole could be improved.

Our approach included a review of each institution. Operations were analyzed and recommendations for improvement developed. With this as a basis, the management and coordination applied to the overall system were then evaluated.

This study focused upon the effectiveness of organization, planning, financial management, general management and administration, operations, and service functions. It did not address educational or academic processes. The resulting recommendations, included in this document, will provide opportunities for conserving substantial resources through the application of improved management methods at the state level and at individual institutions.

Estimated benefits include:

- An annual savings potential of $32.7-million at the present operating level. These can be realized through revisions in organization, planning, space utilization, financial management, systems and data processing, auxiliary enterprises, personnel administration, purchasing, library, and physical plant operations.

- A capital spending deferment of about $100-million over the next ten years. This will result from improved space utilization and coordination as well as careful planning of expansion projects.

This report is presented in four major sections. The first contains a brief description of background factors. The second discusses the system of public higher education as a whole and delineates improvements required to ensure appropriate management and coordination at the state level. The third section is a composite presentation of findings and recommendations relative to individual universities. The last section covers the rapidly developing two-year institutions, addresses their interface with the system, and suggests improvements for the management of their resources.

During the course of this study, we received excellent cooperation and assistance from the executives and administrators of the individual institutions as well as the Ohio Board of Regents. The State of Ohio is indeed fortunate to have the services of such able and dedicated people.

On the basis of our experience on similar projects, we believe the recommendations presented in this report will provide positive assistance in optimizing available funds and in ensuring the most effective use of all assets of higher education. Furthermore, we feel this study will generate other continuing benefits including greater public confidence, improved morale, active management participation, and improved working climate.

Very sincerely,

Warren King and Associates, Inc.

Warren King and Associates, Inc.

Contents

1 **General Background**

9 **Overall System Management**

23 **Composite Review of the Universities**

- 23 Organization
- 29 Planning
- 37 Space Utilization and Registration
- 44 Financial Management
- 50 Systems and Data Processing
- 57 Auxiliary Enterprises
- 63 Personnel
- 68 Purchasing
- 76 Library
- 81 Plant Operation and Maintenance

89 **Community Colleges and Technical Institutes**

97 **Appendix**

Summary

THE GROWTH OF the public system of higher education in Ohio has been extremely rapid and extensive. In part, this has been due to public attitudes which tend to include higher education as a part of mass education. The resulting increase in students, employees, and capital facilities has overstressed existing management systems at both institution and state levels. Now, major changes are necessary to provide the management and administration consistent with the magnitude of resources involved.

The objectives of our study of Ohio's system of public higher education were to review each institution in terms of its management, organization, and administrative practices, and then to recommend needed improvements. In addition, the system of higher education as a whole was reviewed for its management needs to determine how it might be improved.

In the past decade, the administrators of public higher education have effectively met their primary goal—providing education for a rapidly growing enrollment. It would have been unusual if they had also satisfied the need for improved business methods and management controls at the same time. Previously, individual college and university administrators were concerned with the enrollment of a few thousand students, annual operating expenditures of $3-million or $4-million, and very small capital budgets. Now, however, individual institutions have huge enrollments and annual operating expenditures of $20-million or $30-million. Requests for over $100-million for capital improvement are not unusual. The overall system has grown from a half-dozen universities in 1962, to 12 universities, 4 community colleges, and 4 technical institutes in 1969. Future projections indicate further expansion can be expected.

These changes indicate a shift must be made from the administrative concepts used to meet small school requirements to the procedures required to manage large institutions. In addition, the management applied must reflect the fact that the overall system is now very large and complex. Public higher education in Ohio today is a huge financial-managerial entity and must be operated as such. The lack of recognition of the need for a revision of management practices has resulted in a less than optimum use of resources.

Our study has disclosed opportunities to save over $32-million per year in operating costs, while capital expenditures of almost $100-million for the system as a whole can be deferred. Though summarized, the following actions are the basis for realizing cost improvements without affecting the quality of education.

In the overall system management, the role of the Board of Regents should be broadened so its authority is compatible with its responsibility and commensurate with the management needs of the system of public higher education. As part of this:

- The Master Plan for State Policy in Higher Education should be updated and modified to provide adequate and timely guidelines for the development of the individual institutions and the system as a whole. In the future, the Master Plan should be revised annually. Also, the Board of Regents should be designated with authority for implementation of the revised Master Plan.
- The Board of Regents should supplement the Master Plan with a comprehensive estimate of the capital and operating costs of its implementation and obtain a provisional commitment from the Legislature for the requisite financial support. By this means, there will be full and continuing knowledge of future plans and the economic consequences of commitment to the Master Plan. The time period should be no less than 10 years.
- The Board of Regents should develop uniform administrative systems and procedures as a service to the institutions of higher education.
- The Board of Regents should be made responsible for the provision, funding, and management of regional computer networks which would function as utilities in support of the institutions.

- The Chancellor's staff should be expanded and restructured to enable provision of the abovementioned additional services.
- An in-depth study to review the management of academic and instructional functions should be authorized.

In addition, the Board of Regents should be reconstituted to include the addition of three presidents of the institutions of public higher education and four legislators as voting members. The Chancellor would be empowered to vote in the event of a tie ballot.

To achieve greater efficiency and better management coordination and control, individual institutions should:

- Establish a comprehensive planning capability to coordinate the development of academic, nonacademic, and operational plans for maximum utilization of available resources.
- Attach priority to developing a comprehensive plan and evaluate capital requests against it.
- Attain space utilization standards established by the Board of Regents before constructing additional facilities.
- Develop and install fully computerized preregistration and scheduling for students, course offerings, classrooms, and laboratories together with faculty availability and capability.
- Institute long-range financial planning so management is continuously aware of the monetary implications of its programs and plans.
- Institute program-planning-budgeting systems to coordinate the evaluation, control, and allocation of all resources—funds, personnel, and space.
- Organize and reorient financial departments so they become an effective arm of management. Internal audit and management services functions should be established.
- Develop a long-range plan for expanding systems and data processing operations, including the identification of purposes, costs, and benefits.
- Place a high priority on the development of computer-based management information systems.
- Emphasize the need for development of academic resource capabilities as represented by an amalgamation of computers, libraries, television, and audio-visual aids.
- Provide managers of auxiliary enterprises with adequate financial operating reports so they can exercise better control of their operations.
- Broaden the responsibility of the personnel function to include all nonacademic employees and encompass wage and salary administration, management development, recruiting, exit interviews, and employee relations and welfare.
- Improve management and control of purchasing activities by developing the necessary information systems.
- Be allowed to again use state purchase contracts.
- Assign a professional purchasing agent to the library and institute competitive bidding for library purchases of books and other materials.
- Formulate plans for the development of regional library consortiums.
- Provide operating reports to improve management of maintenance and custodial functions.
- Consider the establishment of a two-year college system to perform the functions of existing university branches, community colleges, and technical institutes.

Implementation of these recommendations, which are detailed in the following pages, should help provide improved management and more effective, economical administration of the Ohio system of public higher education at both state and institution levels.

General Background

THE PRINCIPAL CHALLENGE facing the Ohio system of public higher education is the improved management of its available and planned resources. This need for more effective management of these resources does not in any way reflect on the past or current actions of administrators. These dedicated and talented individuals are to be commended for successfully meeting the unprecedented educational needs imposed by rapidly expanding student enrollments.

Successfully meeting the demands of the 1960s for greatly increased higher educational facilities and programs has necessitated a substantial transformation. This has changed the overall system and the individual institutions from relatively small, manageable units to a decentralized, heterogeneous operation of great proportion. In the process, former management methods no longer provide effective control. Consequently, there is a general need to update and improve current procedures to adequately meet today's and tomorrow's management requirements.

The growth of public higher education in Ohio has not followed a fixed pattern. Various methods using existing private and public institutions have been employed as a basis for rapid expansion of the total system. This solved the primary problems of providing instructional and classroom capacity. However, the absence of initial planning plus the lack of voluntary or mandatory coordination have prevented optimum administration of available resources. In order to understand these problems, let us briefly examine the history of public higher education in Ohio and its present components.

The System Today

Higher education in Ohio began without any support from the state, leaving college instruction to private and denominational institutions. The first institution of higher education in the state and in the Northwest Territory was established in 1797 as Muskingum Academy, now known as Marietta College. The first state institution of higher education, Ohio University, was founded in 1804. By 1859, there were 22 colleges and universities in Ohio with only 3,873 students.

Today, institutions of higher education in Ohio number more than 50. In 1968, public higher education alone included 12 state universities, 18 branches, 12 academic centers, 4 community colleges, and 4 technical institutes. A total of 240,000 students attended these schools. Additions continue to be made to the system. A Medical College of Ohio at Toledo is now under construction, and two branches, one community college, and six technical institutes are planned to open in the 1969/70 school year. A concise profile of the universities, technical institutes, and community colleges in the Ohio system of public higher education in 1968 is presented in the table on the next page and in the following brief narratives.

- The University of Akron was originally a privately sponsored institution, Buchtel College, founded in 1870. It became a municipal institution in 1913. Then in 1963 the university began receiving financial assistance from the Ohio Legislature and, in 1967, became a member of the state system. The university consists of seven colleges plus a graduate division, general college, community and technical college, and an evening college.
- Bowling Green State University started as a normal school in 1910; instruction began in 1914. The institution was changed to college status in 1929 and later to a university. Today, the university is comprised of three colleges and offers graduate degrees in several fields. Also, the university operates the Firelands branch and the Bryan, Fostoria. and Fremont academic centers.
- Central State University had its beginning in 1887 when the General Assembly established a Combined Normal and Industrial Department of Wilberforce University. In 1941, the name was changed to the College of Education and Industrial Arts, and the institution began offering four-year degrees. In 1951, it became Central State College. In 1964, graduate studies were authorized in education and English, and in 1965, Central State was given university status. Four colleges make up the university program in addition to the graduate school.

PROFILE OF OHIO SYSTEM OF PUBLIC HIGHER EDUCATION — 1968/69

	FOUNDING DATE	JOINED STATE SYSTEM	1968 HEAD COUNT ENROLLMENT	PERMANENT FACILITIES OBTAINED	DORMITORY CAPACITY	BRANCH CAMPUSES	ACADEMIC CENTERS	COMMUNITY, TECHNICAL COLLEGE	DEGREE GRANTING COLLEGES	GRADUATE SCHOOL	DOCTORAL PROGRAMS
Universities											
Akron	1870	1967	14,432		900	0	0	X	7	X	X
Bowling Green	1910	1910	13,261		8,200	1	3		3	X	X
Central	1887	1887	2,759		1,200	0	0		4	X	
Cincinnati	1819	1968	28,208		4,000	1	1		10	X	X
Cleveland	1923	1965	8,926		165	0	3		4	X	
Kent	1910	1910	19,996		7,000	5	3		5	X	X
Miami	1809	1885	11,343		7,000	2	0		5	X	X
Ohio State	1870	1870	41,906		11,500	4	0		12	X	X
Ohio	1804	1804	17,555		8,700	5	1		6	X	X
Toledo	1872	1967	13,324		1,100	0	0	X	6	X	X
Wright	1926	1967	7,257		0	0	1		4	X	
Youngstown	1908	1967	14,115		200	0	0	X	5	X	
Community Colleges											
Cuyahoga	1962	1962	14,889	1968							
Lakeland	1966	1966	1,626	1970*							
Lorain	1963	1963	3,259	1966							
Sinclair	1887	1966	2,708	1971*							
Technical Institutes											
Clark	1962	1966	483	1968							
Columbus	1963	1967	531	1969							
Jefferson	1966	1966	323	1969							
Penta	1965	1967	717	1965							

*Projected

- The University of Cincinnati is the oldest municipal university in the United States. Its founding date, 1819, represents the establishment of the Cincinnati College and the Medical College of Ohio. In 1870, the City of Cincinnati consolidated these colleges and named them the University of Cincinnati. As a result of a state statute and a Cincinnati charter amendment passed in 1967, the university became the country's first municipally sponsored, state-affiliated institution of higher education. The university is comprised of 12 colleges and a division of graduate studies. It also operates the Raymond Walters branch and the Tri-County academic center in Macon.

- Cleveland State University was established through the acquisition of the property and assets of Fenn College, a private institution in downtown Cleveland, in 1965. The university resides in the most populated metropolitan area and the wealthiest per capita county of the state. Existing facilities include the main campus and the Euclid, Lakewood, and Solon academic centers. The university is projected to be the fastest growing institution of higher learning in Ohio—a 300% increase in student enrollment is forecasted by 1980.

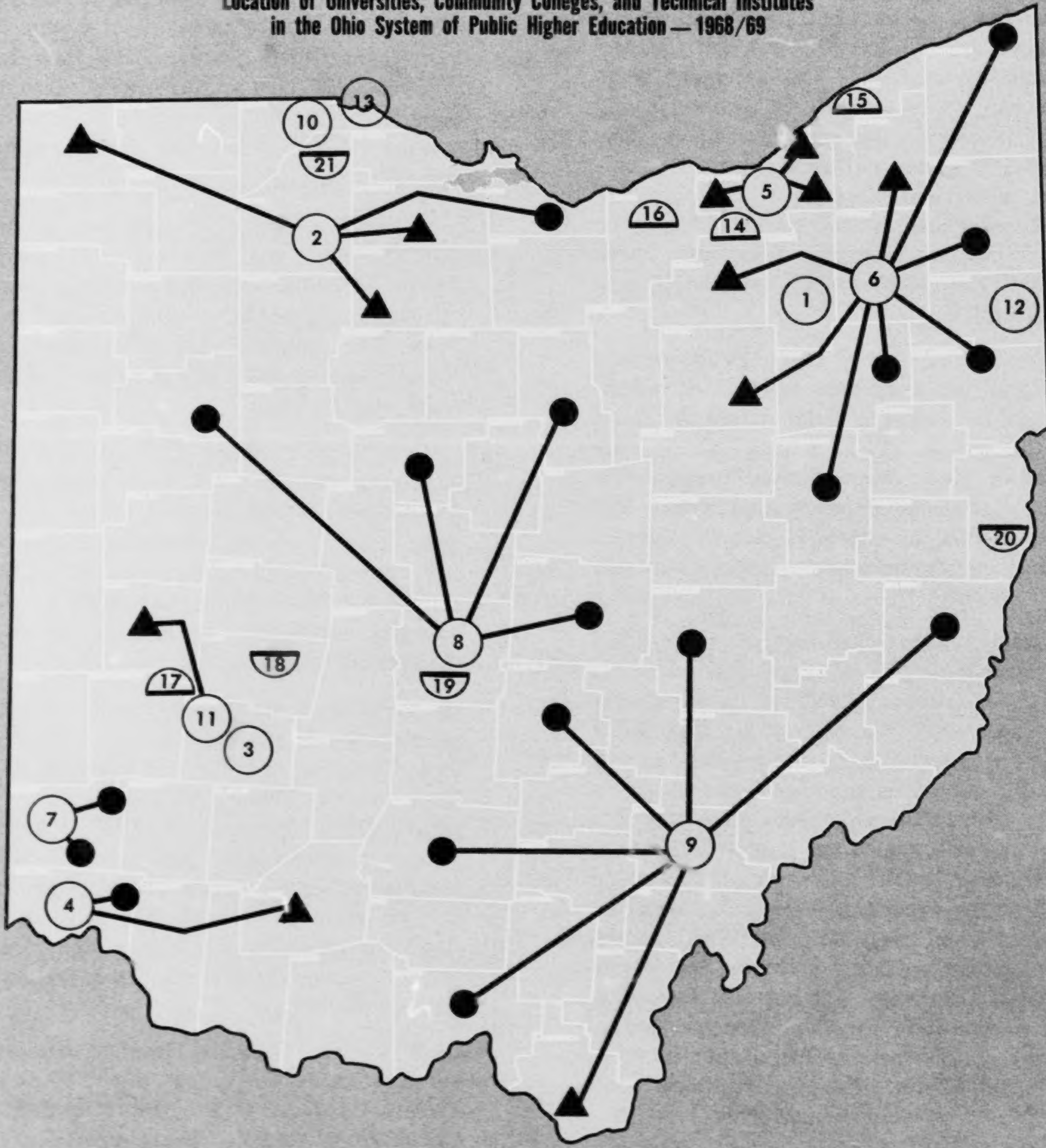
- Kent State University, established in 1910 as a state normal school, was the only state university serving northeastern Ohio until 1964. Its prime location enabled it to accommodate a relatively large number of students on a commuting basis for nearly a half-century. The northeast region of Ohio alone had more college students enrolled during 1966 than did 26 other individual states. Since 1958, Kent's enrollment has nearly tripled. The university consists of five colleges plus the Ashtabula, Columbiana, Stark, Trumbull, and Tuscarawas branches, and the Geauga, Orrville, and Wadsworth academic centers.

- Miami University was founded in 1809 with a land grant of some six square miles, or about 23,000 acres, in accordance with the Northwest Ordinance of 1787. Preparatory instruction began in 1818, and college level classwork started in 1824. Because of financial difficulties, the university was closed in 1873 and did not reopen until 1885 when the General Assembly began to provide appropriations for instructional facilities and operating expenses. Besides an undergraduate curriculum, the university maintains a graduate program which includes the doctorate level. It also operates the Hamilton and Middletown branches.

- Ohio State University was founded in 1870 as Ohio Agricultural and Mechanical College, the state's land grant college. In 1878, its name was changed to Ohio State University. The university consists of 12 colleges and a graduate school. Enrollment at the main campus in 1967/68 was 41,906, the largest single enrollment in Ohio's system of public higher education. In addition, Ohio State University operates the Lima, Mansfield, Marion, and Newark branches.

- Ohio University, founded in 1804, is one of the oldest institutions in the Midwest and the first state university in Ohio. The university offers undergraduate study through six degree-granting colleges. In addition, the graduate college offers 13 doctoral programs and master degree accreditation in more than 40 areas of concentration. Ohio University also has academic programs at the Belmont County, Chillicothe, Lancaster, Portsmouth, and Zanesville branches and the Ironton academic center.
- The University of Toledo began as the Toledo University of Arts and Trades in 1872. It became a municipal institution in 1884, started to receive state assistance in 1963, and became a state university in 1967. Seven colleges comprise the university's academic program, and master and doctorate degrees are offered in several fields. In addition, the university operates a community and technical college.
- Wright State University had its beginning in 1926 when a branch campus of Miami University was established in Dayton to assist in teacher education. Shortly after World War II, Ohio State University began offering engineering and business courses at Wright-Patterson Air Force Base. In 1962, the two parent universities joined together to form a branch named the Dayton Campus of Miami University—The Ohio State University in response to the community's need for expanded higher education programs. In 1967, it was granted separate operating authority and named Wright State University. The university now consists of six divisions, including graduate studies. In addition, it operates the Piqua academic center. The university's 1968 enrollment was comprised entirely of commuter students.
- Youngstown State University was established in 1908 when the School of Law of the Youngstown Association was founded by the YMCA. Later, it developed into Youngstown College, which in turn was succeeded by Youngstown University, a private school. Youngstown became a member of Ohio's system of public higher education in 1967. The university comprises seven colleges, including a community and technical college.
- Cuyahoga Community College admitted its first students in September 1963. During its initial five years, enrollment grew from approximately 3,000 to over 14,900 students. A new metropolitan campus in downtown Cleveland is scheduled to begin operation in 1970/71, and a western campus is maintained in Parma-Parma Heights. In addition, there are academic centers in Lyndhurst and Maple Heights. Further, a third permanent campus is being planned to serve the eastern-southeastern area of Cuyahoga County.
- Lakeland Community College opened its doors to more than 1,000 students in September 1967. The college, located in Mentor, offers both liberal arts and paraprofessional curricula in several technical fields. The college is presently housed in temporary quarters, and a new campus facility is now under construction.
- Lorain County Community College was chartered in 1963. In October 1966, a new campus in Elyria was opened to 2,751 students, representing nearly three times the student enrollment in 1964. There are two major academic divisions. One offers curricula for students desiring to transfer to four-year academic institutions, and the other provides paraprofessional and technical instruction.
- Sinclair Community College was founded in 1966 as successor to privately sponsored Sinclair College. The latter institution, in turn, was originally known as the Dayton YMCA Evening School, which began operation in 1887. The present campus is decentralized into several buildings in downtown Dayton. A new central campus facility is to be ready for occupancy by September 1971. Academic programs now include courses in vocational education, general education, and university parallel curricula.
- Clark County Technical Institute, chartered in 1966, succeeded the Springfield and Clark County Technical Education Program started in 1962. The institute formally began operation on the Springfield campus in July 1967.
- Columbus Technical Institute was organized in 1966 as successor to the Columbus Area Technician School, which was founded in 1963. Course offerings include 11 major subject fields ranging from aerospace technology to wholesale management.
- Jefferson County Technical Institute began operation in 1968 to prepare high school graduates for subsequent technical employment in the Steubenville-Weirton metropolitan region. Technical pro-

Location of Universities, Community Colleges, and Technical Institutes in the Ohio System of Public Higher Education — 1968/69



Universities

1. University of Akron
2. Bowling Green State University
3. Central State University
4. University of Cincinnati
5. Cleveland State University
6. Kent State University
7. Miami University
8. Ohio State University
9. Ohio University
10. University of Toledo
11. Wright State University
12. Youngstown State University
13. Medical College of Ohio at Toledo

Community Colleges

14. Cuyahoga Community College
15. Lakeland Community College
16. Lorain County Community College
17. Sinclair Community College

Technical Institutes

18. Clark County Technical Institute
19. Columbus Technical Institute
20. Jefferson County Technical Institute
21. Penta County Technical Institute

Legend

○ University
● Branch
▲ Academic Center
◓ Community College
◒ Technical Institute

gramming ranges from accounting and auditing instruction to electrical and electronic courses.

- Penta County Technical Institute began as a vocational school serving 17 high school districts in 1965. It became an approved technical institute under the financial auspices of the Board of Regents in 1967. In addition to the main campus in Perrysburg, a technical center is operated on the Lima branch campus of Ohio State University.

The geographical location of the above-described institutions and their various branches and academic centers is illustrated by the map on the facing page. Generally, these locations were determined by the state's population centers so that public higher education facilities would be within 30 miles of the majority of students living throughout Ohio.

Until 1963, there was no comprehensive planning approach for evaluating and planning how best to meet the state's overall higher education needs. By necessity, the campuses grew in response to immediate demands rather than by an orderly, planned process. In most instances, time for careful, long-range planning simply was not available. Then, in 1963, the Board of Regents was established to improve the organization and coordination of higher education on a state-wide basis. This nine-member board approves all new academic, branch, or technical institute facilities in the state as well as new degree programs; assists in making the most effective use of existing resources devoted to public higher education; and recommends activities and programs which should be offered by various institutions. The board also presents recommendations for a state-financed capital improvement program as well as appropriations for public higher education to the House and Senate Finance Committees.

In addition, the board formulated the Master Plan for State Policy in Higher Education, which was published in 1966. However, its implementation depends heavily on voluntary action by individual institutions.

Population Trends

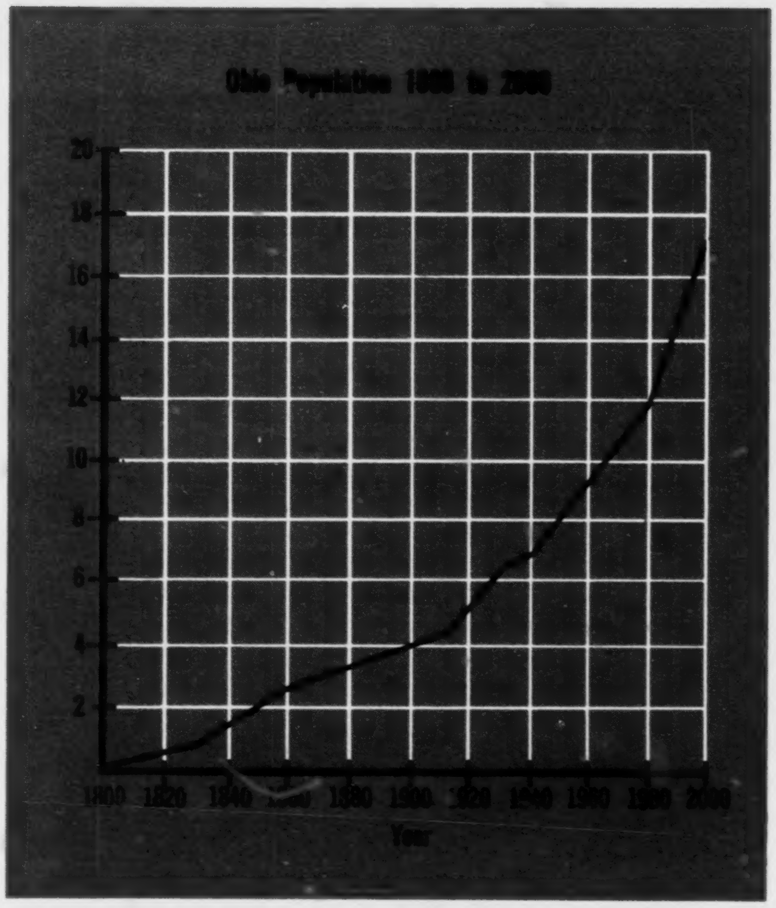
Population growth is generally a reliable indicator of the economic health and vitality of a state and its regions. This, in turn, conditions the projected growth of higher education institutions as well as capital and facility planning.

At present, the Ohio Turnpike forms the backbone of the state's largest population concentration. By the year 2000, this region is expected to form a giant interstate megalopolis stretching from Youngstown on the east to Sandusky and Toledo on the west.

Over 75% of the state's population is now concentrated in the economic regions of Lakeshore Uplands, Miami Valley, and Scioto Valley, as defined by Ohio's Department of Development. These regions contain 38 of the state's 88 counties and run diagonally from Cincinnati in southwestern Ohio, through Columbus in central Ohio, to Cleveland in northeastern Ohio. Thus, interstate highways 71 and 75 together with the Ohio Turnpike form a triangle which contains the urban population of the state. In comparison, population along the Ohio River Valley is primarily rural.

The population of the State of Ohio has increased continuously since 1800. The 22.1% gain between 1950 and 1960 represented the largest percentage increase for any decade since the Federal Census of 1850. The urban population of Ohio has increased from 8% in 1810 to more than 73% in 1960. By the year 2000, the state's population is expected to grow to over 16.3-million, an increase of more than 68% since 1960.

Actual Ohio population figures from 1800 to 1960 and estimated population increases from 1965 to 2000 are shown in the graph below. These figures demon-



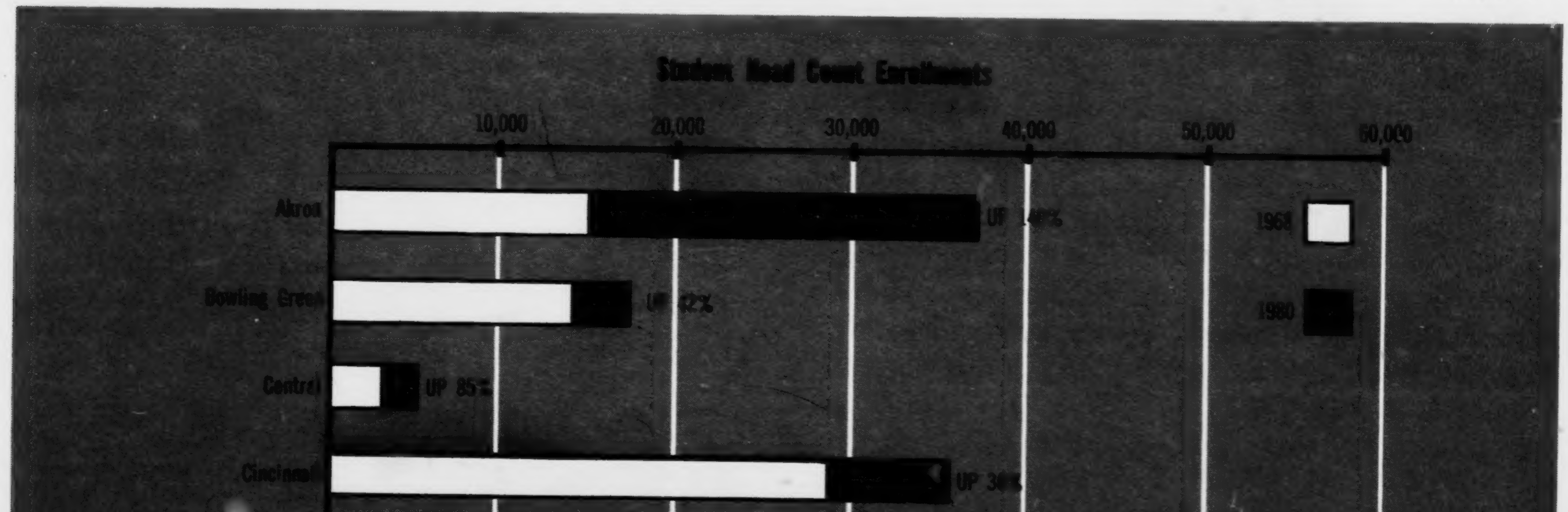
strate a projected continuation of past and present population growth trends through the turn of the twentieth century.

It is estimated that the student population of public higher education institutions in Ohio will grow from 174,000 in 1965 to about 450,000 by 1980, representing an increase of 158%. During this same 15-year period, private institutions are expected to increase by 100%, or 200,000 students. This means that the so-called student population explosion during the 1960s is not expected to diminish in the immediate future. Present and projected enrollments of Ohio's major public universities are shown in the bar graph below. These data indicate student body increases ranging from 30% at the University of Cincinnati and Ohio State University to over 300% at Cleveland State University between 1968 and 1980.

Today's Resources

In the 1968/69 school year, Ohio's institutions of public higher education enrolled 240,000 students. Distribution by enrollment level and type of institution is shown in the table below.

STUDENT LEVEL	UNIVERSITY CAMPUSES	TWO-YEAR CAMPUSES
Freshmen	72,000	34,000
Sophomores	35,000	9,000
Juniors	30,000	1,700
Seniors	25,000	1,000
Other undergraduates	5,000	500
Master's students	15,000	800
Doctoral students	6,000	—
Graduate professional	5,000	—
	193,000	47,000



The institutions of public higher education now in operation have a book value of over $891-million. These physical facilities total 42-million square feet, while the net assignable area equals 26-million square feet. On a percentage basis, net square footage is allocated to:

Instruction	30%
Library	4%
Research	5%
Administration and plant operation	12%
Public service	1%
Auxiliary services	48%

In terms of personnel resources, public higher education in Ohio employs more than 30,000 in full-time and almost 16,000 in part-time positions. These can be broken down as:

	FULL TIME	PART TIME
Nonacademic		
Administrative	4,433	2,099
Classified	17,237	5,752
Academic	8,457	7,931

Student, personnel, and facility resources require and utilize extensive economic resources, representing a gigantic business undertaking. Public higher education spent approximately $471-million on current operations alone in fiscal 1968. By major categories, these funds supported the activities of:

Instruction and general operations	$297-million
Research	22-million
Public services	55-million
Auxiliary services	86-million
Student aid	11-million

Income for these expenditures was derived from a variety of sources including:

Governmental appropriations	$151-million
Student fees	107-million
Auxiliary enterprises	84-million
Gifts and grants	26-million
Other	116-million
Total	$484-million

The figures quoted in this section as well as statistical data used throughout the report represent the composite of audited figures available at individual universities. These data are not necessarily completely compatible with similar statistical information now available elsewhere. Variation can be readily accounted for since in most cases the original source of information was not identical.

Tomorrow's Needs

Financing public higher education places a tremendous responsibility on each state. The burden of the taxpayer must be maintained at a realistic level while the needs of the universities and schools must be met. This presents a contradictory problem surrounded by and permeated with emotion. The solution will require adoption of a broad systems approach in which individual institutions as well as the total state-wide effort of public higher education receive appropriate consideration.

The main objective of this study has been to help encourage the optimum use of total higher education resources. Emphasis has therefore been placed on analyzing, evaluating, and improving organizational, operating, management, and administrative functions relative to the noninstructional areas of public higher education. No direct attempt has been made to evaluate the effectiveness of academic or instructional activities. However, the impact of operations and procedures in instructional areas could not be totally ignored because they indirectly but substantially affect operating efficiencies, space utilization, and the use of other resources.

The Ohio Legislature has clearly recognized the importance of coordinated development of educational facilities by its recent passage of legislation prescribing student enrollment ceilings for Bowling Green State University, Kent State University, Miami University, Ohio State University, and Ohio University. In addition, this legislation provides the Board of Regents with necessary approval authority for the construction of residence halls at these five particular universities.

Overall System Management

OUR APPROACH to the review of Ohio's system of public higher education included a study of each institution in terms of management, organization, and administrative practices. The review of each of the 12 universities, 4 community colleges, and 4 technical institutes together with a representative sample of the 18 branch operations provided a collective knowledge of the entire public system of higher education in Ohio. With this as a basis, we were then able to address the system as a whole in terms of its management needs.

In a system of public higher education, two extremes of management are possible. In one, each institution is completely autonomous. In the other, an all-powerful individual is appointed to manage the entire system. Both alternatives have weaknesses and strengths, but in Ohio both are equally inappropriate. With complete local autonomy, the coordinated development of public higher education would be impossible. On the other hand, highly centralized management could result in a very efficient but institutionalized system. Since education is expected to lead, individual university leadership can be stifled and mediocrity can result.

For this reason, our most critical task was to determine an appropriate balance between complete local autonomy on the one hand and an all-powerful central management on the other. The approach which was used was to identify the management needs for the system as a whole and then provide the most effective means to meet each on an individual basis.

The basic resources which must be provided to support a system of higher education are capital investment in facilities, operating financial support, and talented personnel. The manner in which these resources are applied and administered determines the utilization of the limited funds available. With adequate coordination and management, the system is in control.

The major management needs of the overall system develop from the following:

- Capital additions are inadequately planned and not well coordinated at state and institutional levels. Since hundreds of millions of dollars are involved and great growth in enrollment is expected to continue, the state must ensure that sufficient management control is applied.
- Financial operating support is adequately developed; however, refinements are required for institutional differences.
- The manner of administration has as many gradations of quality as there are institutions to develop systems and procedures. Despite common purpose and need, each institution independently "reinvents the wheel" of administrative systems at great expense in terms of duplicated effort. In addition, the resulting systems of management are universally weak.
- The system of public higher education is not sufficiently coordinated.

The recommendations for the management of the overall system of public higher education address these needs and include:

- An organizational structure to enable improved management, coordination, and development of the system of public higher education as a whole.
- Procedures to manage the planning and provision of capital.
- Suggested refinement in the manner of providing operating support.
- A means by which common management systems can be centrally developed and administered to serve the president of each institution.

This approach therefore maintains the local autonomy of management to the extent feasible and appropriate. Where this is not possible, it suggests additional management structure and services be provided at the state level.

A review of the management of the overall system of public higher education in Ohio must necessarily consider the existing organizations which serve this purpose in any manner. At this time, there is only one such group: the Ohio Board of Regents.

Prior to 1963, coordination of the programs and activities of the institutions in the state system of higher education was an informal effort of the Inter-University Council, a voluntary organization of university presidents. The council had no legal status, and its efforts were relatively ineffective, probably because each president's primary loyalty was to his own institution. The critical need for effective system-wide coordination of university affairs became evident in 1962 when the state appropriation for university support totaled approximately $55-million.

On September 20, 1963, the Legislature established the Board of Regents to coordinate the activities of the universities and colleges in the Ohio system of public higher education. Board members are appointed by the Governor, with the consent of the Senate, to serve overlapping nine-year terms. Three members are appointed every three years. The chairmen of the education committees of the Senate and House of Representatives serve as ex officio members of the board without votes. Members of the board are not affiliated with any private or public college or university. The board's professional staff consists of a Chancellor, Executive Officer, Program Officer, Facilities Planning Officer, Systems Officer, Finance Officer, and Budget Analyst.

The board's first obligation was to prepare a Master Plan for Public Higher Education in Ohio. A provisional plan was published in April 1965. After public hearings in major Ohio cities, discussions with interested educational groups, and further consideration by the board, the Master Plan was published in June 1966. It represented the board's interpretation of public policy and established the roles and missions of all state institutions of higher education. It also delineated the role of the Board of Regents and established 17 advisory committees to assist the Regents on the technical aspects of curriculum, student admission and registration, institutional budgeting and finance, and other specialized areas related to higher education and student affairs. The growth pattern in student enrollment was analyzed, and enrollments were projected through 1980.

The Regents' statutory requirements and acknowledged responsibilities include evaluation and direction of academic programs, review of fiscal needs of state institutions, and the development of inter-institutional cooperation. To discharge these responsibilities, the Board of Regents interacts with the individual institutions, the Federal Government, Ohio executive and legislative committees, Auditor of State, Director of Finance, and other elements of government as the need arises. This interaction generally consists of coordinating the fiscal and administrative facets of state universities and colleges and developing appropriate support formulas. State support involves funds appropriated by the Legislature, disbursed to the institutions by the Director of Finance, and monitored by the Auditor of State to ensure legal accountability and expenditure. Since state assistance is directly related to available instructional resources, it is also directly related to the range and quality of academic programs.

The board's Master Plan goal of placing a higher education facility within 30 miles of every Ohio high school graduate reflects expressed public policy. Its implementation on a controlled basis entails the establishment of optimum student enrollment levels, by academic division, for each institution. In turn, optimum enrollment levels must necessarily influence policy formulation in academic, fiscal, and facility matters. Policies established in one area of concern have a definite interface and interrelationship with those in others.

It is apparent that public institutions of higher education are influenced by policy or procedural articulation at several levels. They must be responsible to taxpayers through their elected representatives; to their respective faculties through professional and local associations; to the Board of Regents; and to their respective boards of trustees. Until recently, consideration was also given to the statutory provisions which required that, "A graduate of the twelfth grade shall be entitled to admission without examination to any college or university which is supported wholly or in part by the state."

In actual practice, the Board of Regents interprets broad policies adopted by the Legislature, implements and expands these by articulation of its own related policies, and devises administrative and control procedures to ensure response at the institutional level.

Appraisal of current operations

The management approach for the system of public higher education is inadequate as it now exists. It includes neither the organizational structure nor the management procedure consistent with the magnitude and complexity of the resources involved. The major means by which management is applied to the system is through the Board of Regents, but the assigned responsibilities and authorities do not meet the need.

The Ohio Board of Regents must contend with several conflicting pressures. For example, a primary mandate is coordination of higher education programs and activities, and in many respects this implies or requires institutional conformity. Conversely, it is desirable that senior universities be accorded reasonable autonomy and retain their individual and distinctive identities. Concurrently, the public and legislative demand is for equal facilities and educational opportunity in both urban and rural areas throughout the state. The present thrust is from urban-located institutions, where student enrollment has increased 230% since 1961.

The board and the Chancellor have not yet structured an organization adequately staffed to ideally fulfill its acknowledged role and discharge all assigned and implied responsibilities. The basic responsibility is to administer certain affairs of the universities and related institutions within the confines of policy, scope, and mission prescribed by the Legislature and interpreted in the Master Plan. At present, there is minimal involvement of universities in the board's policy deliberations, and very little is being done in the field of inter-institutional cooperation. In addition, many universities have generally been able to accord only token recognition to the Master Plan, since authority for implementation has not been delegated. Furthermore, the Legislature is relatively uninformed as to long-range plans for higher education in Ohio. This is true for both capital requirements and operating support. The situation should be remedied to give legislators full knowledge of objectives, reasonably well-developed plans for the future, a related timetable, and the economic consequences of commitment to the Master Plan.

In many significant respects, the Master Plan is no longer a dynamic document and needs updating. This is particularly true in delineation of the missions and roles of major universities and their branch campuses.

All universities have routine and common administrative, recordkeeping, plant operation, and student service activities and needs. These functions have no academic or educational significance. They are necessarily performed to facilitate the institution's primary function of educating its students. Despite this commonality of requirements, there is no uniformity in systems, procedures, or staffing at the various institutions. The resultant multiplicity of procedures inevitably produces variations in operating and fiscal data reported to the Board of Regents and other state agencies. These data are frequently the basis for important policy decisions and the board's state support formulas. Furthermore, there is substantial and needless duplication with little evidence of inter-institutional cooperation.

State support for institutions of higher education is allocated on the basis of full-time-equivalent enrollment levels. This practice may produce inequities, since the formula does not contain sufficient refinement to include such matters as fixed and variable cost relationships, condition of facilities, stage of program development, and size of institution.

Recommendations for improvement

Examination of the overall state administrative organization, operating practices, coordination efforts, and degree of direct involvement with the institutions of higher education has disclosed some deficiencies and duplication of effort. Expanded effort in certain areas and consolidation of activities in others would strengthen overall institution administration and control effort as well as produce substantial savings. The following recommendations are addressed to all these factors, but primarily to the development of a more effective management for the Ohio system of public higher education. In doing so, they necessarily involve the present Board of Regents and shape it to a more appropriate form.

1. *Update the Master Plan and designate the Board of Regents as the implementing authority.*

A Master Plan is a basic requisite for coordinating the development of a system of public higher education to achieve common purposes. The Ohio Master Plan for State Policy in Higher Education, published in June 1966, sets forth the roles and missions of the Ohio Board of Regents and the individual institutions in the state system at that time. In 1966, the system consisted of 7 universities, 35 branches or academic centers, and 2 community colleges. There were also well-developed plans for adding four existing institutions to the state system and establishing a state college of medicine. In addition to reflecting state policy, the Master Plan also supplied guidelines for the individual institutions.

However, composition of the state system has changed appreciably. There are now 12 universities, a state medical college, 18 branches, 12 academic centers, 4 community colleges, and 4 technical institutes. Moreover, individual institutions have not developed growth patterns consistent with those anticipated in the Master Plan. The demand for local facilities, equal opportunity for higher education, the resultant expansion of student programs, and mass instruction requirements have had a significant impact upon the state system.

Since the Master Plan no longer presents adequate guidelines for state policy or for individual institutions, many universities have been forced to formulate their own developmental plans. Others have no comprehensive plan for the future because Master Plan guidelines are obsolete and the institutions have not developed a substitute. In effect, there presently is no valid Master Plan for state policy in higher education. With some universities conducting affairs on the basis of their own plans and others proceeding without a plan, requisite coordination of the state system is seriously impaired. Therefore, the Board of Regents should immediately update the Master Plan to reflect changed conditions and provide current and valid information to the Legislature and the public, as well as the institutions involved.

Following legislative endorsement of the new Master Plan and appropriate involvement of the various state institutions, a program of implementation should be developed. The Board of Regents should be assigned responsibility for implementation and vested with commensurate authority. Delegation of this authority to the board will necessitate legislative action. However, such action is not practicable unless the Legislature is fully informed of the objectives and fiscal implications of the Master Plan. The following recommendation addresses this requirement.

2. *Supplement the Master Plan with a comprehensive estimate of capital and operating costs related to its implementation and obtain a provisional commitment from the Legislature for financial support.*

The Master Plan should present anticipated requirements of the state system of higher education on a long-range basis. At present, the plan is essentially limited to a projection of growth in student enrollment, the development of educational programs, and the assigned roles of the various institutions in the state system.

A significant omission in the plan is an estimate of the resources required for its implementation. The success of any such plan depends upon the financial support available, and much of this support must come from the state at the pleasure of the Legislature. However, the Legislature cannot pledge support to a program for higher education without reliable and accurate knowledge of its impact upon the state's fiscal resources. In the absence of a provisional commitment of legislative support, the Master Plan must be viewed as a proposal rather than a plan of action. This necessarily has been the posture embraced by the trustees and administrators of universities in the state system. The result has been reserved or passive acceptance of the Master Plan rather than a concerted effort to effect its implementation.

Therefore, the Master Plan must be supplemented by carefully researched and detailed data projected for a period of at least 10 years. Such data should include cost estimates and timetables for both capital improvement and operating requirements. They should be keyed to specific programs or projects, and these, in turn, correlated with student enrollment forecasts. Financial support from non-state sources such as federal funds, gifts, and grants which might reasonably be anticipated should be recognized and placed in proper perspective. Furthermore, there should be a clear and concise statement of the need and benefits of each project.

The proposed supplemental package should be presented in straightforward layman's language, well-organized, easy to comprehend, and complete. The completed data should be presented to the Legislature with a request for evaluation and endorsement of the plan it represents. This endorsement should include a provisional commitment of financial support for the program as a whole. A specific allocation of funds should be sought to cover projects and programs scheduled during the first two years of the plan. Thereafter, the presentation data should be kept current to reflect changing conditions. A year of projection should be added as each passing year is dropped. Then the data should be presented to the Legislature at each new session. The endorsement, provisional commitment, and specific allocation request should be repeated at each presentation. At the second and subsequent presentations, the request for specific allocation of funds will be for the second year following.

Implementation of this recommendation will give the Master Plan genuine substance. It will also provide the legislators and their constituents with meaningful data on which to base a judgment and thereby create an atmosphere of understanding and empathy with the educational community. Administrators of universities in the state system will have a basis for unreserved confidence in the Master Plan and an incentive to cooperate in its advancement.

3. *Restructure the Board of Regents to provide more direct involvement of the public institutions of higher education and the Legislature.*

It is suggested that three presidents of public institutions of higher education and four legislators (two from the Senate and two from the House of Representatives), all nominated by their contemporaries, be appointed to the Board of Regents as voting members.

The Board of Regents presently consists of nine Ohio residents with an interest in and knowledge of higher education. The enabling statute provides that appointees may not be affiliated with any college or university. However, as members of one of the board's committees, presidents of state institutions of higher education are advisors to the Regents. In this capacity, they participate in policy deliberations only at the pleasure of the board. Nevertheless, they are directly concerned with all policy decisions. Also, the chairmen of the education committees in the Senate and House of Representatives are ex officio members of the board, but the statutes are silent as to their function.

Legislators and university administrators are most interested in every board policy decision. However, existing relationships do not provide a degree of involvement commensurate with that interest. Additionally, the board does not have the necessary and timely intelligence as to institutional and legislative viewpoints on matters for which they must formulate policy. Implementation of this recommendation would create a board composed of five Ohio residents, four legislators, and three presidents of public institutions of higher education. The Chancellor would be empowered to vote in the event of a tie ballot. This would provide the necessary close liaison between the public, the Legislature, the Board of Regents, and all institutions.

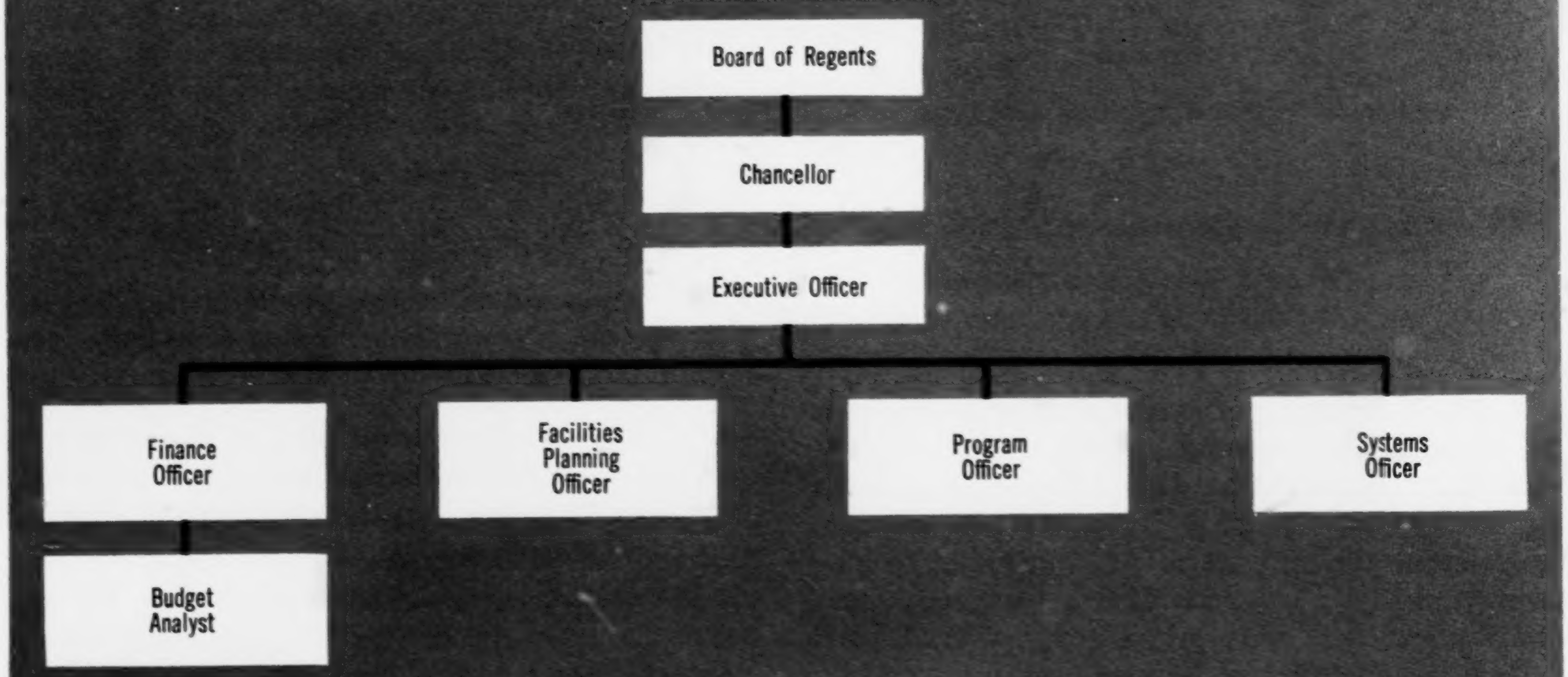
4. *Restructure the Chancellor's staff organization to offer expanded services to public institutions of higher education.*

As previously described, the major deficiencies in the existing overall management system relate to master planning, capital planning, and their implementation. In addition, certain necessary services are not now provided to the institutions through the existing system. Our concern here is with the organization required to serve such needs. It is suggested that these be met by broadening the role of the existing Board of Regents. Later recommendations describe aspects of the additional services to be provided.

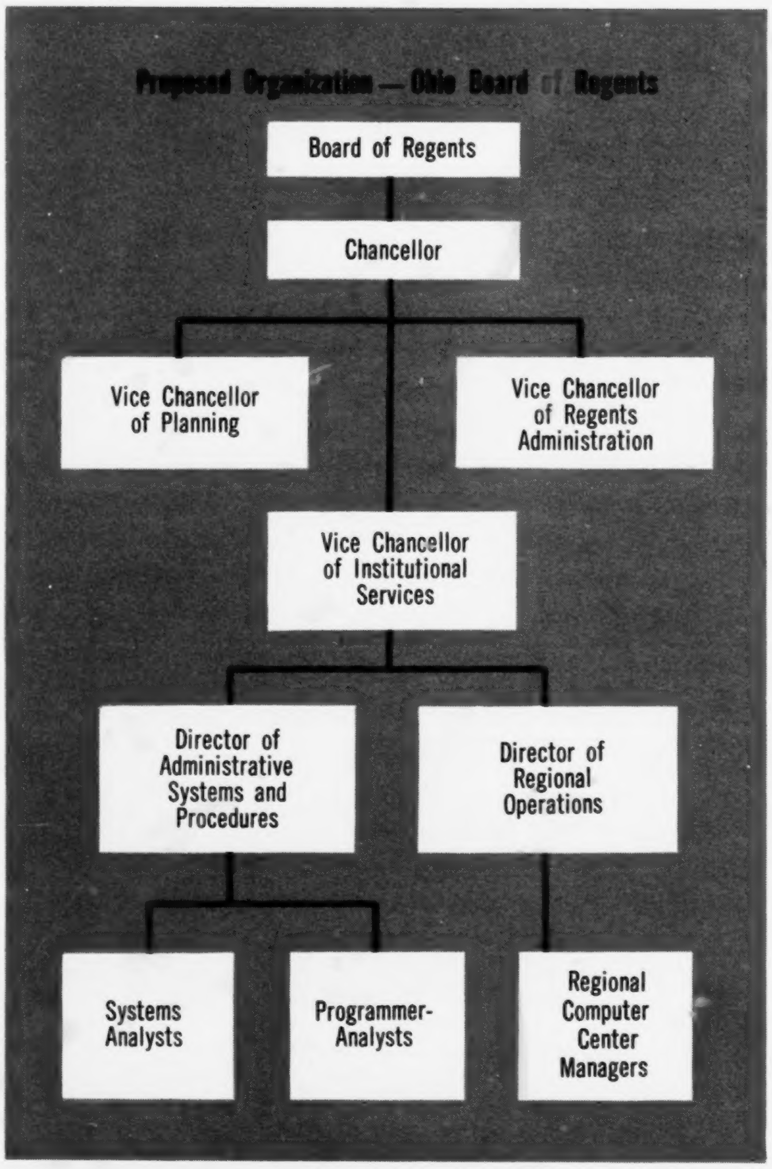
The present organization, shown below, includes a small staff headed by a Chancellor. There are also seven clerical and secretarial employees. The proposed organization would include several additional staff services. These are functional and address common needs now performed by each individual institution. The present situation requires a full staff in every institution, each performing the same function but using a different approach to generate a variety of results. Consolidation of administrative efforts in a centralized activity will relieve the institutions of the costs involved. It will also improve the quality and utility of the resultant procedures and systems.

The changes depicted in the proposed organization chart entail the addition of 29 employees to the Chancellor's staff. These are:

- Vice Chancellor, Institutional Services
- Vice Chancellor, Planning



Present Organization — Ohio Board of Regents



Proposed Organization — Ohio Board of Regents

Board of Regents
Chancellor
Vice Chancellor of Planning
Vice Chancellor of Regents Administration
Vice Chancellor of Institutional Services
Director of Administrative Systems and Procedures
Director of Regional Operations
Systems Analysts
Programmer-Analysts
Regional Computer Center Managers

- Vice Chancellor, Regents Administration
- Director, Administrative Systems and Procedures
- Director, Regional Operations
- Three Regional Computer Center Managers
- Six systems analysts
- Fifteen application programmer-analysts

The key new positions involved are shown on the proposed organization chart above and are described in the following paragraphs.

The Vice Chancellor of Institutional Services would be responsible for administering and coordinating all institutional services and related information processing for the Chancellor's office. These services embrace development, implementation, and maintenance of uniform systems and procedures. They include preparation and distribution of pertinent operating manuals, initiation and direction of regional computer centers, continuing liaison with institutional administrative organizations, and expansion of institutional services as opportunity and judgment dictate.

The incumbent should be a senior executive qualified to recruit his own organization, thoroughly cognizant of institutional management needs, experienced in the development and installation of administrative systems and procedures, and solidly grounded in computer technology. Additionally, he must be capable of establishing a rapport with university administrators, academicians, and researchers. The proposed organization chart depicts a suggested structure for this Vice Chancellor's organization. It provides for the systems and procedures function, regional computer networks, and their central administration.

The Vice Chancellor of Planning would be responsible for all planning activities of the Board of Regents and the Chancellor's organization as well as coordination of academic and facilities planning at the individual state institutions of higher education. The Vice Chancellor would also be responsible for preparation and continuing maintenance of the Master Plan. In collaboration with the Vice Chancellor of Institutional Services, the incumbent of this position would be responsible for introducing program-planning-budgeting procedures at state universities and related institutions. Additionally, the Vice Chancellor of Planning would maintain governmental liaison when state or federal funds are used to construct academic or support facilities on university campuses.

The Vice Chancellor of Regents Administration would be responsible for general management of the Chancellor's office; administration and allocation of federal funds to individual institutions; and the accumulation, analysis, and interpretation of institutional fiscal and budget reports. In the absence of the Chancellor, the Vice Chancellor of Regents Administration will function in his stead within the framework of authority delegated by the board and the Chancellor.

It is estimated all annual costs involved in this staff enlargement—compensation, employee benefits, office space, and related services—will approximate $430,000.

5. *Develop uniform systems and procedures for routine recordkeeping, reporting, budgeting, and service functions to satisfy common needs of state-supported educational institutions.*

All institutions in the state system have the same data accumulation, retrieval, and processing requirements. The following paragraphs present specific examples of these common needs.

Budget Preparation and Administration—Throughout the state system, considerable time and effort are devoted to the preparation of relatively useless budget data and reports. These are often produced to satisfy convention rather than administrative needs. This condition is usually a result of a lack of systems and procedures support for computer operations. Because certain minimal budget data are necessary for management use, reporting and control deficiencies are partially remedied through manual clerical effort. The result is low-grade data and high cost. Uniform processing of budget data based upon well-designed procedures will substantially improve the structure of management reports and reduce both computer and clerical costs throughout the system. Ohio State University has well-conceived program-planning-budgeting procedures which could serve as a model for the entire state system of higher education.

Student Data Systems—Each institution has devised its own set of systems to accommodate student data requirements. In most universities, individual records are established for such functions as student registration, course and section assignment, student housing, financial aid, grade recording, and alumni follow-up. Some of these operations are computerized; some are manual. The need for a master student record is universally recognized. There has been a start toward achieving this end in some institutions, but, in general, progress has been very limited. A primary difficulty has been a lack of available and qualified personnel to attack the problem. In other instances, limited computer time and programming capacity have been stumbling blocks. A single set of proven procedures and the proposed central systems and procedures staff would provide a much improved information system at an appreciably lower cost. Ohio University and Miami University have developed programs which might well form the basis of an ideal system for all institutions in the State of Ohio.

Student Registration—There are as many types of student registration procedures as there are universities in the state system. They range from completely manual to substantially computerized. There are no fully computerized systems, but this appears to be the ultimate and proper goal. Efforts to develop computerized procedures have been hampered by the same problems cited above for student data systems. However, the University of Akron has made excellent progress in the development and documentation of computerized registration procedures. These should be perfected and evaluated for state-wide use.

Admissions Procedures—Student data records generally have their beginning in the admissions office, so it is appropriate that admissions procedures be computer oriented. A potential ancillary benefit is that regionalized computer treatment will provide a means of detecting multiple applications. Frequently, students apply for admission to more than one university. Rapid and timely detection of multiple applications is feasible through recordation of social security numbers. Such detection could eliminate repeated processing of multiple applications and provide more reliable data on which to base enrollment forecasts.

Curriculum, Student, Faculty, and Facility Scheduling—The various state institutions have done little toward computerizing scheduling procedures. Such a step is not practicable until related functions—those cited above—are fully mechanized, and provision for correlation with computerized curriculum, student, faculty, and facility scheduling is built into them. Presently, these are manual functions at most institutions. In some instances, end-purpose data compiled manually are added to computer data banks after the fact for inclusion in printouts containing related information. In designing uniform systems, this necessity can be anticipated and satisfied with the requisite provisions. Additionally, computerization will eliminate manual operations and improve the scheduling functions.

Library Acquisition, Cataloging and Circulation Control—Universities in the state system are using the Library of Congress cataloging system or are taking steps to facilitate its adoption. Catalogs are not generally published because the source data are on file cards and not easily converted to catalog format. Accordingly, inter-library loans between institutions are accomplished only on a "shotgun" query basis. As a result, librarians tend to acquire many special items and collections in addition to the basic reference works and curriculum support. Computerization of university library catalogs on a regional basis would provide information to all librarians in the area and facilitate inter-institutional exchanges of special items. This capability would eliminate needless duplication of rare and expensive items and special collections.

Management Reporting Systems—Only one state institution, Ohio University, has addressed the problem of designing a comprehensive and coordinated management reporting system. Ohio University has made an excellent beginning, but its progress is hampered because subordinate and contributing systems have not been completely correlated. Independent consultants were engaged to assist in general design of the reporting system but not to correlate the necessary contributing systems and procedures and computer programming. The university staff organization is striving to complete the project on a part-time basis. There is merit to this reporting system, and it would be suitable for use by all institutions in the state system. The central systems and procedures staff could facilitate completion of the project and provide all institutions in the state complex with a comprehensive management reporting system.

Inventory Control—This function is generally not given appropriate attention on the university campus, despite the usually substantial inventories in foodstuffs plus maintenance, custodial, and laboratory supplies as well as the campus bookstore. Inventory records are usually maintained, but they represent simple listings of inventory items and are rarely used as a control mechanism. Nevertheless, inventory records should be an important element in the determination of reorder points, economic order quantities, maintenance and other operating cost analyses, and the detection of pilferage—a factor on every campus. Computerized inventory control procedures are both simple and practical. Their effective use can produce appreciable economies and facilitate cooperative purchasing among institutions to obtain price advantages.

Purchasing Procedures—Computerized procurement records and procedures have an important interface with budgetary and inventory control functions. Most budget encumbrances are initiated in conjunction with the purchasing function, and a correlation with inventory records provides usage data and controls, automatic reorder of high-use supply items and other staples, economic order quantities, and a purchasing calendar. Furthermore, computerized storage of item specifications, vendor performance data, pricing history, seasonal trends, and supply sources on a regional basis will supply information to identify cooperative buying opportunities. Ohio State University has developed, but not installed, procedures which meet these needs. They should be made available to all institutions.

Personnel Records and Payrolls—These records are maintained in as many different ways as there are university campuses. Many methods are manual, and a considerable number of clerical people are involved. Some institutions have partially computerized procedures for both payroll and personnel records, although the emphasis is usually on payrolls. At times, payroll procedures are logically coordinated with budget reporting. Bowling Green State University has one of the better systems, which is keyed to operating cost analysis reports. These could be further developed and refined for use in the state system. A uniform computerized system for all institutions will eliminate existing manual functions and effect the logical coordination of personnel data with payrolls and budgets.

At present, each institution in the state system is developing its own version of the same basic procedures in each of the above-mentioned areas. In a few institutions, there is a skilled, organized systems and procedures effort. In others, the task is a part-time assignment for available personnel with marginal qualifications. In still others, systems and procedures simply evolve as a matter of necessity. As a result, state universities are developing different systems for handling common requirements in at least 10 major areas. Furthermore, no single institution has developed completely satisfactory practices in all the areas cited.

The Chancellor's office should provide state-wide leadership and administer development of the best possible uniform systems and procedures in all areas of common need. Independent development of the same procedures by each institution is more costly than the development of a single, completely satisfactory procedure for common use. To remedy this situation, a highly qualified, computer-oriented Director of Administrative Systems and Procedures plus an adequate complement of systems analysts and programmers should be added to the Chancellor's staff.

The Chancellor's systems analysts should assemble appropriate and responsible representatives from the institutions and guide them in seminar meetings until the basic functions and activities involved have been identified. With the counsel and professional assistance of the systems analysts, these representatives should determine the essential ingredients of each application area. The optimum methods of accomplishing each function and activity should be determined. Then a uniform set of procedures and support computer programs should be developed by the systems analysts and programmers. Thereafter, the procedures should be reduced to writing, organized as an operating manual, and administered by the Chancellor's office.

At this point, a small working committee should be appointed from the group to assist in installing the new systems on a state-wide basis. After all new systems have been installed, the Chancellor's systems analysts would be available for travel to the various institutions to identify problems and provide solutions. However, individual institutions should be in a position to modify or implement standard reports or procedures when required by their particular management needs.

The implementation of uniform systems and procedures in each university will free considerable clerical personnel in all the major administrative areas. Annual clerical personnel savings of $2.4-million are anticipated. The central systems and procedures staff will also reduce the need for administrative systems and programming personnel at each university. Annual net savings of $200,000 are estimated for this personnel reduction. Thus, total annual savings of $2.6-million could be achieved through the implementation of this recommendation with this central staff.

6. *Establish regional computer centers, funded and administered by the Board of Regents, to accommodate the institutional, research, and administrative needs of all state institutions.*

All major institutions in the state system have one or more computer installations for instruction, research, and administrative data processing. At practically all institutions, the demand for computer time is growing, but this growth is predominantly in the academic and research fields. Administrative data processing needs are relatively fixed in terms of logical applications, although data volume is expanding as enrollments increase.

It is anticipated that increased academic and research needs for computer time will demand more sophisticated hardware at all institutions. The current trend must lead to expansion of individual computer installations. Regional computer centers would permit utilization of the most advanced computers, increase efficiency, reduce operating costs, and ensure uniform processing of common administrative data.

The preceding recommendation proposed development of uniform systems and procedures for data processing requirements common to all state-assisted institutions. This recommendation therefore suggests regional computer centers to further advance the concept of appropriate uniformity and provide an economical central service function. Academic and research use of computers must be completely controlled by the individual institutions. Regional centers should be equipped to meet all reasonable needs of these institutions without impairing institutional flexibility.

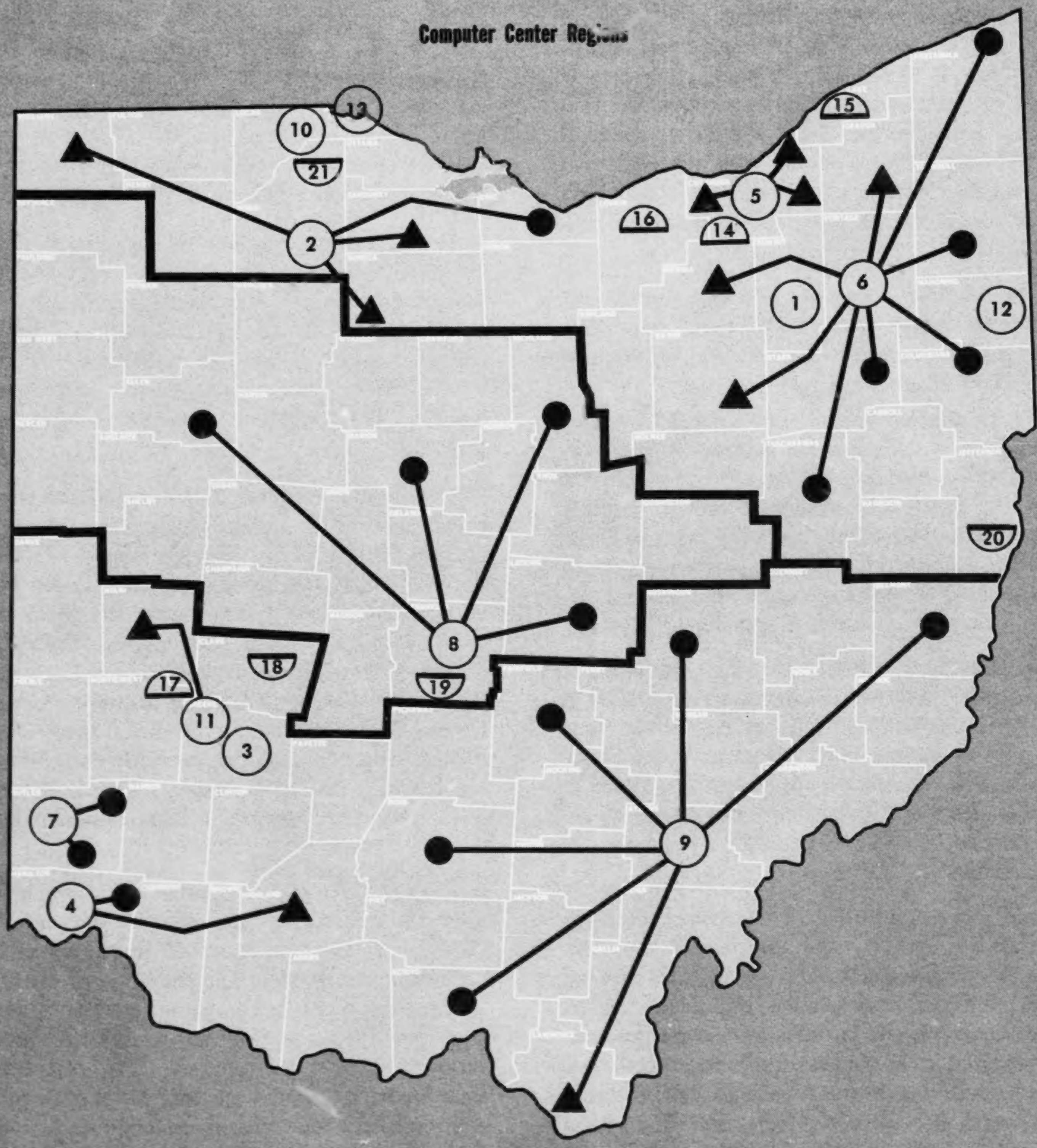
A plausible approach to meet the increasing computer needs of all the state institutions of higher learning in Ohio is to establish three regional computer centers. These centers would be equipped with large-scale time-sharing processors supported by smaller processors to handle low-speed input/output activities of printing, card reading, and data phone traffic. Specification of the exact computer equipment, physical location, communication media, and terminal equipment was beyond the scope of this study. However, within the dollars allotted to each of the three centers, there is the capability of meeting the academic and administrative needs of the universities for at least the next five years. We also believe that every university in the public system of higher education in Ohio will require the support of a time-shared computer to properly develop the instructional applications of computers.

The map shown on the next page illustrates the three computer center regions proposed and also pinpoints the schools included in each region. For ease of reference, they are the northern, central, and southern regions. Although we had considered five regions in our interim observations, further research clearly indicates a three-region computer center network is preferable.

The northern region center would provide a computer network to service Kent State University, the University of Akron, Youngstown State University, Cleveland State University, Bowling Green State University, the University of Toledo, the Medical College at Toledo, Cuyahoga Community College, Lorain County Community College, Lakeland Community College, Penta County Technical Institute, and Jefferson County Technical Institute. Initially, the two-year institutions would utilize the network established at the universities. Provision should be made to extend the communications network to these campuses at a future date, if advisable.

The central region computer center would be based upon the existing complex of computers at Ohio State University. This center would service Ohio State and its branch campuses. The initial steps taken to consolidate the multiple computers at Ohio State into an integrated network with a substantial time-sharing capability would be pursued. The computer power already exists for this region, but existing computer configurations will have to be modified or replaced to consolidate and integrate the various processors into a regional network facility. Because of the level of sophistication already attained at the three existing installations at Ohio State, this regional center could be quickly developed and serve as a model for the other two.

The southern region computer center would form a network to accommodate the needs of Ohio University, Central State University, Wright State University, the University of Cincinnati, and Miami University. Sinclair Community College and Clark County Techni-



Universities

1. University of Akron
2. Bowling Green State University
3. Central State University
4. University of Cincinnati
5. Cleveland State University
6. Kent State University
7. Miami University
8. Ohio State University
9. Ohio University
10. University of Toledo
11. Wright State University
12. Youngstown State University
13. Medical College of Ohio at Toledo

Community Colleges

14. Cuyahoga Community College
15. Lakeland Community College
16. Lorain County Community College
17. Sinclair Community College

Technical Institutes

18. Clark County Technical Institute
19. Columbus Technical Institute
20. Jefferson County Technical Institute
21. Penta County Technical Institute

Legend

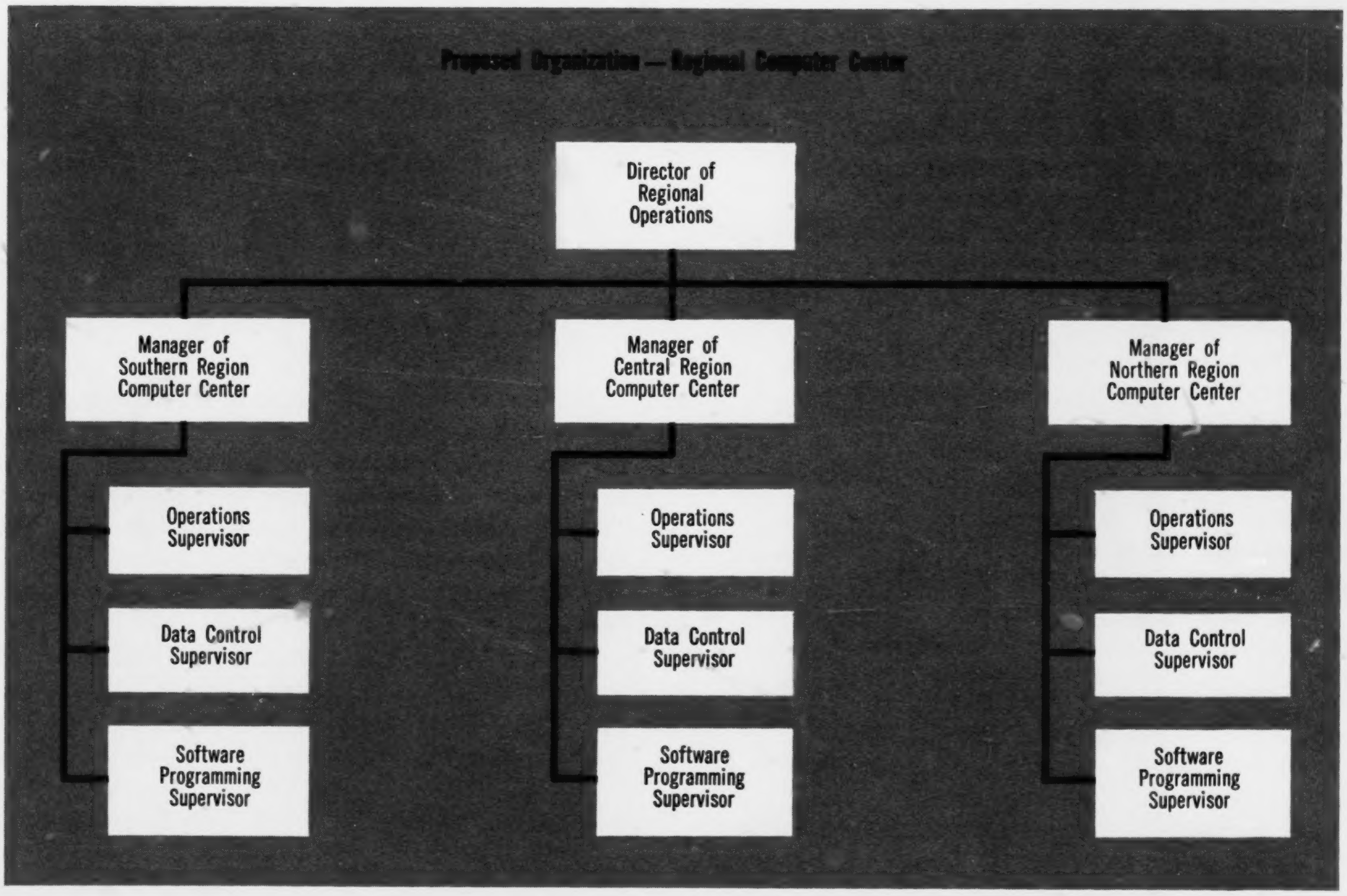
○ University

● Branch

▲ Academic Center

◓ Community College

◒ Technical Institute



Proposed Organization — Regional Computer Center

Director of Regional Operations
Manager of Southern Region Computer Center
Manager of Central Region Computer Center
Manager of Northern Region Computer Center
Operations Supervisor
Data Control Supervisor
Software Programming Supervisor
Operations Supervisor
Data Control Supervisor
Software Programming Supervisor
Operations Supervisor
Data Control Supervisor
Software Programming Supervisor

cal Institute would utilize the regional center through the university network, with provision to tie directly into the network at a future date, if desirable.

To effectively administer the network complex at each regional computer center, the organization plan shown above is proposed. The Director of Regional Operations would be responsible for the management, coordination, control, and planning of the three regional computer centers. The dynamics of computer technology require a concentration of his effort in researching emerging developments and assessing their possible role in the regional centers. The three computer center managers would assist the director in forecasting future equipment and space needs. One of the prime responsibilities of each computer center manager would be to maintain effective liaison with the Director of Management Services and the Director of Academic Resources at each university in the region to ensure that administrative and academic programs are serviced satisfactorily.

Each regional computer center manager would have three functional groups reporting to him. An operations supervisor would be responsible for the operation of all computer equipment and the effective scheduling of staff and equipment. The data control supervisor would be responsible for the limited amount of data input originated at the center, the storage and control of consumable supplies, the tape and disk library, audit control of the console log, job accountings, and data receipt and distribution. The software programming supervisor would be responsible for the maintenance of software and the creation of generalized software routines in coordination with the other centers.

The average annual cost of each regional computer center is estimated to be $2.5-million. This estimate includes $2-million for hardware and $500,000 for staff, space, and consumables. Within the allowance for equipment, provision is made for a large-scale time-sharing system (such as a General Electric 645 or an IBM 360/67) together with supporting input/output processors. No provision is made for educational discounts or grants from federal or private sources which could further reduce these costs. A total annual expense of $7.5-million is estimated for the three regional computer centers.

The table below summarizes the economic aspects of regional computer centers.

SAVINGS FROM ESTABLISHMENT OF THREE REGIONAL COMPUTER CENTERS

Annual Costs of Regional Centers		
Hardware, at $2,000,000 per center		$6,000,000
Staff, at $500,000 per center		1,500,000
Communications services		700,000
University costs		
Terminal equipment	$ 700,000	
Staff, space, and supplies	600,000	
		1,300,000
Total regional network		$9,500,000
Savings		
Equipment rental		
University current plans	$9,500,000	
Proposed regional network	6,700,000	
Difference		$2,800,000
Elimination of duplicate technical staffs		700,000
Total savings		$3,500,000

Each regional computer complex would be linked to its associated universities by a communications network. Data transmission costs are very difficult to estimate since they depend upon the exact location of each center in relation to its associated universities. Various possibilities exist to achieve cheaper communications than are presently available through existing common carrier facilities. A state university private data transmission network of long lines, microwave relay, or coaxial cable which could be used in part to transmit educational computing power merits study. Another possibility is to use a small piece of an educational television circuit. Presently, the use of a Telpak facility or similar common carrier service provides the most immediate alternative. For purposes of this report, we assumed annual communications costs of $700,000.

The individual institutions would share in the power of the regional computer center through the use of terminals. Terminals are defined to include any available input/output device. Not only typewriter terminals but also high-speed card readers and printers, graphical display devices, and small computers which can store and process data to a limited extent could be used to call on the regional computer for complex processing, computation, and data retrieval. The individual types of devices should be determined in a detailed feasibility study of the regional computer center concept. We estimate each university will require terminal capacity equivalent to a small computer and a staff of four operators to man this high-speed terminal 24 hours a day. The annual cost for the 12 universities to utilize the regional centers would total about $1.3-million.

Therefore, including the equipment and staff at the three centers, the communications lines, and the terminal device and staff at each university, the regional center computer network will cost an estimated $9.5-million annually.

Every university in the system of higher education in Ohio is planning a substantial increase in expenditures for computers. State-wide expenditures of $19-million are anticipated in the next four to five years. Of this, computer rental will approximate $9.5-million. This reflects somewhat less than an annual increase of 20%, versus a national average of 25%. Under the regional concept, estimated equipment rentals would be $6.7-million, or $2.8-million a year less than the individual university expansion of computer facilities. In addition, the elimination of duplicate technical staffs necessary for software programming support and computer operation and control at each university will yield annual savings of about $700,000. Total annual savings to be achieved through the establishment of three regional computer centers is therefore about $3.5-million. Not only will economies be achieved, but also an increase in computer power will be realized.

By establishing regional computer centers, each university can tailor the amount of computer time used to its funds. The institution is also relieved of the task of administering a large-scale computer facility. Every institution of higher learning in Ohio will have access to the most sophisticated software systems and interactive terminal devices available. This could not be achieved on an individual institutional basis.

7. *Investigate the development of a more refined basis for allocating state funds to recognize unique institutional situations which affect operating costs.*

The appropriation of funds to state institutions of higher education is based upon a formula involving numbers of students and a support factor. The support factor recognizes two major elements—academic programs and levels of instruction. Treatment of these elements is uniform for all institutions in the following categories: academic centers, technical education, universities, and medicine.

There is merit in uniformity because it places all institutions on an equal footing and seems to ensure equitable distribution of available state funds. However, no two institutions in the state system are identical. Certain institutional characteristics and situations could be identified, considered, and evaluated as elements warranting a modification of the method of distributing state funds. The present method of determining the support formula appears to be very well grounded, and it is not suggested this be altered. Rather, the allocation of funds should be carried a step further to recognize, test, and give weight to factors such as those listed below.

- General administrative costs for institutions do not vary in direct proportion to full-time-equivalent student enrollment. These costs vary—but not in direct proportion—according to the number of students resident on campus because of the related functions involved. Some institutions allocate significant amounts of general administrative costs to auxiliary enterprises. Others make no allocation or have very limited auxiliary operations. For example, Kent State University allocated more than $838,000 in administrative charges to auxiliary enterprises in the 1967/68 school year.
- Physical plant operating costs vary according to the number, age, and location of the structures involved. These factors are not reflected in full-time-equivalent student enrollment data. For example, the following are reported costs per full-time-equivalent for plant operation and maintenance at a representative group of universities for 1968/69:

University of Akron	$153
Central State University	307
Cleveland State University	217
Miami University	160
University of Toledo	127

- Sponsored research and funded public service activities are substantial in several universities. These are subject to an allocated overhead charge which serves to affect a portion of the institution's net operating costs. Examples for 1967/68 are:

University of Akron	$ 289,775
Bowling Green State University	1,235,814
University of Cincinnati	1,002,778
Miami University	27,435
Ohio State University	1,802,908
Ohio University	304,637

It seems appropriate to explore the desirability of modifying the allocation of state funds to the various institutions to recognize these elements. The board's resource analysis procedures acknowledge that all institutional operations cannot be equated with student enrollment and uses four indexes: enrollment, faculty, student services, and space. However, in the allocation of state funds to individual institutions, relativity in the weights of these elements is lost when only the graded factor of full-time-equivalent enrollment is considered. The physical plant operating cost figures cited show the overall average cost is $199 per full-time-equivalent student. Accordingly, there are appreciable differences at individual institutions.

Composite Review of the Universities

THE MAJOR OBJECTIVE of this study has been to identify potential improvements in the management of Ohio's public higher educational resources both at the state and institution levels. As an important component of the study, therefore, the organizational, management, and administrative functions at each of the 12 state-supported universities were reviewed and evaluated in terms of current operating conditions and anticipated demands of the future. Through personal interviews, approximately 700 key positions were examined relative to these criteria. This research encompassed the major administrative departments of the following four-year institutions:

- University of Akron
- Bowling Green State University
- Central State University
- University of Cincinnati
- Cleveland State University
- Kent State University
- Miami University
- Ohio State University
- Ohio University
- University of Toledo
- Wright State University
- Youngstown State University

A later section presents similar data relative to the operation of two-year schools including community colleges, technical institutes, and branches.

At each institution, the department head was interviewed. In many cases, the second and third levels of supervision were also consulted. During these reviews, the balance of management responsibility and authority was assessed. Operating controls, lines of communication, and availability of appropriate management information were evaluated.

The resulting recommendations on each university were discussed with its president at the conclusion of the individual studies. Currently, several universities are already implementing proposed improvements. This composite section is therefore intended to describe the more general and significant problems at the university level and to present recommendations which should be implemented to improve effectiveness in university management.

Throughout this study, a functional approach of review and analysis was applied to the major administrative and management operations of each university. This has been retained in presenting the recommendations in this section. The 10 functional areas used are as follows:

- Organization
- Planning
- Space Utilization and Registration
- Financial Management
- Systems and Data Processing
- Auxiliary Enterprises
- Personnel Administration
- Purchasing
- Library
- Plant Operation and Maintenance

Organization

THE MANAGEMENT organization at each of the 12 universities in the Ohio system of public higher education should be staffed and structured to discharge the administrative functions of planning, organizing, directing, coordinating, and controlling. Effective administration involves clear-cut areas of responsibility, well-defined commensurate lines of authority, and established channels of communication. These are all necessary to provide for an automatic and timely flow of data and information vital to responsive management.

University affairs are administered by certain key executives who report directly to the President. The number of these senior administrators varies from three at Youngstown State University to ten at Kent State

University. Each President, in turn, is responsible to a nine-member Board of Trustees. Trustees are appointed by the Governor, except at the University of Cincinnati where five are appointed by the Mayor of Cincinnati and four by the Governor. As a result of increased student enrollment and the expansion of campus facilities, the scope and complexity of these responsibilities have grown at all universities.

Appraisal of current operations

In general, the universities in the state system of higher education in Ohio are staffed by an unusually high concentration of very able men. The one exception is Central State University, where important key positions have been vacant for several months.

In a group of institutions as large and as dynamic as the state-supported universities in Ohio, it would be unusual not to find many opportunities for improvement. The universities' organizational structures are no exception to this premise. In most schools, certain key functions such as personnel administration, accounting, and planning are segmented, and responsibility is divided among several departments. Cleveland State University, a young and rapidly growing school, is the only institution developing an active and organized planning function.

The universities have been appropriately concentrating effort upon development of their major objective: providing quality education to students. To have accomplished this in the face of rapidly expanding enrollment patterns is a considerable achievement. The resultant organizational structures, however, do not provide for optimal grouping of related functions. All too often, the number of positions reporting to the university president places unmanageable and undue demands upon his time.

In institutions such as Ohio State University, Ohio University, Kent State University, Bowling Green State University, Miami University, and others with large numbers of resident students, university management is responsible for administering services involving the daily lives as well as the instruction of students. This complex and demanding requirement calls for a precise organizational structure, excellent channels of communication, and constant attention to matters of student services and activities. These demands and requirements are usually met well but not always in the most practical way. However, there is no indication of undue pressure on university management, or evidence that problems have been resolved by expedient rather than considered and appropriate measures.

Quite often, areas of responsibility and lines of authority are not clearly defined, and there is overlapping and some confusion. For example, at Central State University, the Vice President for Business and Finance reports directly to the Board of Trustees rather than to the President. This relationship, which bypasses the President, destroys his line of authority and jeopardizes the administration of the university.

Ohio University has faced the problem of extensive turnover in top and middle management positions. Although the staff is being effectively rebuilt, it does not yet function as a well-integrated team. For example, there are still serious problems in the area of communication. Nevertheless, a new system of management reports based upon the concept of "responsibility accounting" is now being initiated. The system is very well constructed and organized and, although not fully implemented, has contributed substantially to the improvement of management control. It might very well serve as a model set of procedures suitable for use by all universities in the state system.

It is important to recognize that this section is limited to a review of the organizational structure of Ohio's state universities and the responsibilities of various key positions within that structure. No evaluation is made of the performance of individual incumbent personnel.

Recommendations for improvement

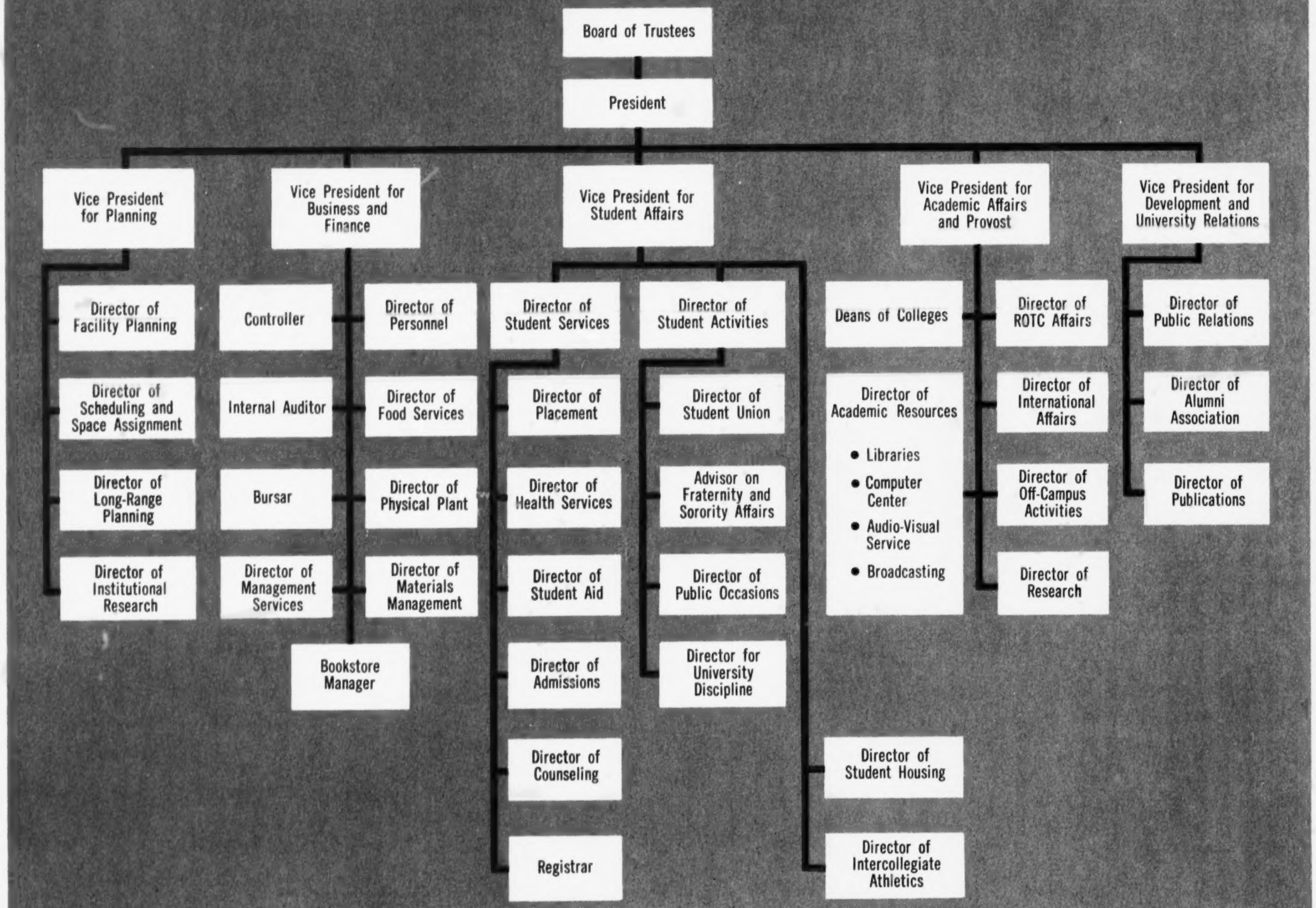
To increase the effectiveness of university management, the following recommendations suggest a basic organizational structure for state universities. It is intended that this structure be viewed as establishing guidelines, subject to appropriate modification by individual institutions to meet particular conditions or requirements. Later recommendations address particular situations and propose modification of existing organizational structures to place more emphasis on certain functions, consolidate others, and provide a more logical grouping of still other activities.

A chart showing the suggested model organizational structure for application and modification at all four-year institutions appears on the facing page. For comparison, existing organization charts for each university are included in the Appendix to this report.

1. *Restructure the President's immediate organization to provide direct management of basic administrative areas and reduce the number of positions reporting directly to his office.*

Within the broad framework of policies set by the Board of Trustees, the President is the guiding force

Proposed Model Organization — State University in Ohio



Board of Trustees
President
Vice President for Planning
Director of Facility Planning
Director of Scheduling and Space Assignment
Director of Long-Range Planning
Director of Institutional Research
Vice President for Business and Finance
Controller
Internal Auditor
Bursar
Director of Management Services
Director of Personnel
Director of Food Services
Director of Physical Plant
Director of Materials Management
Bookstore Manager
Vice President for Student Affairs
Director of Student Services
Director of Placement
Director of Health Services
Director of Student Aid
Director of Admissions
Director of Counseling
Registrar
Director of Student Activities
Director of Student Union
Advisor on Fraternity and Sorority Affairs
Director of Public Occasions
Director for University Discipline
Director of Student Housing
Director of Intercollegiate Athletics
Vice President for Academic Affairs and Provost
Deans of Colleges
Director of Academic Resources
• Libraries
• Computer Center
• Audio-Visual Service
• Broadcasting
Director of ROTC Affairs
Director of International Affairs
Director of Off-Campus Activities
Director of Research
Vice President for Development and University Relations
Director of Public Relations
Director of Alumni Association
Director of Publications

of the university. As chief executive officer, he directs a broad spectrum of academic, business, and public relations affairs. He is also the chief public representative of the university. The quality and effectiveness of his administration and his ambassadorial ability and activities are important factors in shaping the reputation of his school.

A university's administrative functions can logically be divided into the following five principal categories:

- Planning
- Academic affairs
- Student affairs
- Business and fiscal affairs
- Development and university relations

Therefore, the President's immediate organization should be structured so it is directly related to these basic administrative categories. Likewise, responsibility for each category should be assigned to a senior administrator, preferably designated a vice president, with a commensurate delegation of authority. Furthermore, the positions reporting directly to the President should be essentially limited to these vice presidents. Exceptions may be made in situations where activities such as sponsored research or intercollegiate athletics represent truly significant items. Here prudent judgment or board policy may dictate they report directly to the President. In addition, the President will probably have need of an administrative assistant on his immediate staff.

This logical definition and specialization of function and control of reporting responsibility will:

- Simplify the President's administrative work load.
- Concentrate key responsibilities into five areas.
- Optimize delegation of authority and assignment of responsibility.
- Eliminate fragmentation of functions.
- Permit the President to be away from the campus as necessary.

Through these five officers and an administrative assistant, the President will be fully cognizant and abreast of every significant aspect of university operations. Each of these five positions is discussed separately in the following recommendations. An additional benefit of these recommendations will be to enable knowledge of the existence of comparable positions at each university so that consideration can be given to filling vacancies from within the Ohio system.

2. *Establish the position of Vice President for Planning reporting directly to the President.*

Because of their growth and development, universities in the state system of higher education require comprehensive planning on both a short- and long-range basis. The objectives of each school, consistent with the state Master Plan, must be determined and coordinated. Academic, facility, capital, operational, and fiscal plans must be integrated into a single cohesive program to meet these objectives. Growth projections must be made by each university, priorities established, and maximum utilization of university resources obtained. For these reasons, and because the proposed position has not generally been included in university organizational structures, it is important that a position with responsibility for coordination of all university planning be created.

In most state universities, several individuals spend part of their time performing particular or isolated planning activities. All these planning duties would be assumed by the organization of the new Vice President for Planning. This consolidation will generally require the following changes at most universities.

- Existing university planning functions should be transferred to the organization of the Vice President for Planning. This includes such functions as campus planning and facilities planning.
- The university architect, engineer, or space inventory group, usually part of the physical plant department, should also be transferred to the new planning organization.
- The scheduling and classroom assignment function is now usually assigned to the registrar. This function should be under the jurisdiction of the Vice President for Planning. Classroom and laboratory scheduling is intimately concerned with utilization of the university's physical resources. In this light, it represents short-term planning and is an important part of overall planning. Full familiarity with and appreciation of the intricacies and problems of registration and scheduling are essential to the planning operation. For these reasons, it appears logical that the individuals responsible for scheduling report to the Vice President for Planning. Current space utilization problems can be brought more conveniently to the attention of the vice president who will give them consideration in the development of future plans for the university.
- The institutional research activity should also be transferred from its usual placement in the aca-

demic structure to the Vice President for Planning. This represents a fact-finding and research function vital to planning.

- The function of regents reporting should also be assigned to the organization of the Vice President for Planning.
- Responsibility for the compilation, analysis, and preparation of the university's annual operating budget should be transferred to the organization of the Vice President for Planning. The budget represents short-term planning and as such should be part of the overall planning function. Additionally, the principles of program-planning-budgeting should be adopted and employed in the conduct of this activity. Responsibility for monitoring and administering the completed, approved annual budget should remain with the office of the Vice President for Business and Finance.
- Initially, and particularly in the smaller universities, the Vice President for Planning would act as head of the long-range planning function. This involves working with all university officers and major department heads to coordinate the development and integration of objectives, academic and nonacademic plans, as well as related capital and fiscal plans into a single university program. It is anticipated that university growth will ultimately require that this be a full-time position.

Planning operations must be university-wide in scope. Therefore, it is important that such functions relate to both the main campus and the branches. From the standpoint of both management and planning, the main campus and the branches should be considered a single system.

3. *Structure the organization of the Vice President for Academic Affairs to embrace all academic aspects of university operations.*

At most universities in the state system, the chief academic officer (sometimes designated as Provost, sometimes as Vice President for Academic Affairs) has more positions reporting directly to his office than any other senior administrator. Frequently, this is because his assigned responsibilities include functions which are more logically oriented toward student or planning affairs. Typical examples are student placement, admissions, institutional research, the registrar, and student counseling. On one occasion or another, all these activities have been an assigned responsibility of the senior academic officer. In such cases, it is suggested they be transferred to the appropriate administrator.

Conversely, there are also instances of purely academic functions being interspersed with student services or student affairs in the organizational structure. In these cases, they should be transferred to the organization of the Vice President for Academic Affairs.

In the Systems and Data Processing section of this report, it is suggested the library, university computer facilities, audio-visual services, and television be combined into an academic resources center. This activity should be under the jurisdiction of the Vice President for Academic Affairs.

4. *Assign responsibility for administration of all student activities and services other than instruction to the Vice President for Student Affairs.*

The areas of responsibility which should be assigned to the Vice President for Student Affairs fall naturally into three categories: student services, student activities, and student housing. Each of these functional areas should be administered separately by a director. Organizationally, these three positions and the Director of Intercollegiate Athletics would be the only line positions reporting directly to the Vice President for Student Affairs. Occasionally, valid considerations may dictate that intercollegiate athletics report directly to the President. This should be the exception rather than the rule.

The Director of Student Services would be responsible for administering functions such as student placement, health services, student financial aids, admissions, registrar, psychological services, student counseling and testing, and international student advisory services. The Director of Student Activities would administer such functions as the student union, fraternity and sorority affairs, public occasions, student discipline, religious counselor office, social advisor, and director of minority affairs. This arrangement consolidates all functions related primarily to student life.

Attainment of this objective will necessitate certain transfers of presently assigned responsibilities in most universities. In some, it will involve additions to the existing staff organization. In others, only a retitling of existing positions will be necessary. Still other institutions will be faced with eliminating positions such as Dean of Men and Dean of Women.

5. *Modify the organization of the Vice President for Business and Finance to strengthen budgetary and fiscal controls, introduce long-range financial planning, and improve management reporting practices.*

The office of the Vice President for Business and Finance is a service organization for all other elements of university administration. Here operating and capital funds are received and subsequently allocated. The majority of operating and other informational reports also originate at this function. Therefore, it is important that the vice president's organization be structured and staffed to render these services on an efficient and timely basis. It is equally important his assigned responsibilities be limited to those activities directly related to his primary missions.

In general, the Vice President for Business and Finance is responsible for all university operations not specifically assigned, on a functional basis, to the four other vice presidents. These should include:

- The treasurer's and bursar's activities, related principally to the receipt and disbursement of university funds and the keeping of students' accounts.
- The controller's department and the maintenance of all accounting records, issuance of all required financial, budgetary, and other operating reports, plus the internal audit function.
- The materials management and related purchasing function, including inventory control and the establishment and maintenance of purchasing procedures for general university operations, student union, dining facilities, and the library.
- The operation of university facilities through the director of the physical plant, including maintenance and repair, custodial and grounds care, student and employee safety, acquisition operations, maintenance of university vehicles, campus security, and, in general, maintenance of the proper physical environment on campus.
- Business aspects of auxiliary enterprise operations include the student union, residence and dining halls, bookstore, and all other similar activities such as airport and golf course operations.
- Other management services such as systems and procedures activities, administrative data processing, operations cost analyses, budget administration, financial planning and cash flow projections, investment of surplus funds, personnel services to all nonacademic employees, and the preparation of financial reports required by research sponsors.

In order to achieve the desired consolidation and/or scope required for maximum effectiveness in the office of the Vice President for Business and Finance, the following organizational recommendations must be implemented by the universities designated.

- University of Akron — Separate the functions of Controller and Treasurer, which are now assigned to one person.
- Bowling Green State University — Establish the position of Director of Management Services. Transfer responsibility for nonbusiness aspects of student operations to the Vice President for Student Affairs.
- University of Cincinnati — Establish the position of Director of Management Services. Transfer responsibility for campus security to the Vice President of Business Affairs.
- Central State University—Have the Vice President for Fiscal Affairs report to the President rather than directly to the Board of Trustees. Accelerate efforts to fill the vacant positions of Controller and Chief Accountant.
- Cleveland State University—Appoint a Controller. Transfer responsibility for the nonbusiness aspects of the student union, residence, and dining hall activities to the Director of Student Activities. Create the position of Director of Management Services. Transfer the reporting responsibility of the Director of Campus Security to the Vice President of Business and Finance.
- Kent State University—Establish an organizational group to administer all financial, accounting, budget, administrative data processing, and related reporting functions under the direction of the Vice President of Finance.
- Miami University—Establish the position of Director of Management Services. Institute a materials management function.
- Ohio State University—Establish the position of Controller. Create the position of Budget Director.
- Ohio University — Establish the position of Vice President of Business and Finance. Establish the position of Director of Materials Management.
- University of Toledo—Establish the position of Director of Management Services. Establish the position of Budget Director.
- Wright State University—Establish the position of Director of Materials Management.
- Youngstown State University—Establish the position of Vice President for Business and Finance. Appoint a Controller. Appoint a Director of Purchasing. Transfer responsibility for residence halls and off-campus housing to the Director of Student Activities.

The operational impact of these actions and the benefits to be derived from their implementation are addressed in detail in the Financial Management, Auxiliary Enterprises, and Purchasing sections of this report.

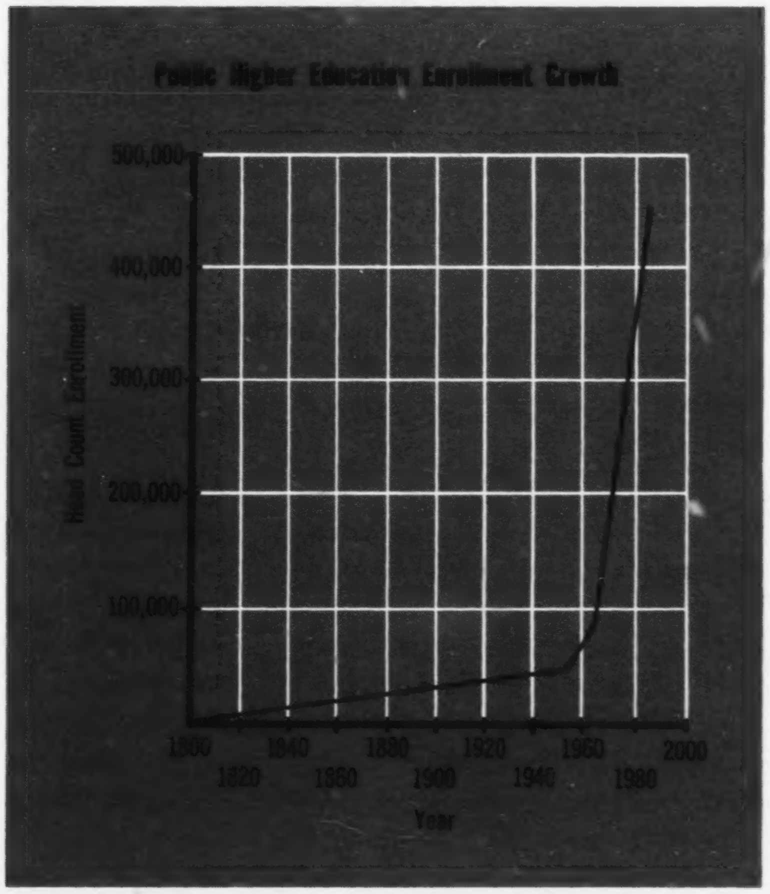
6. *Consolidate the functions of university development, university relations, public relations, alumni relations, and university publications and printing services under the jurisdiction of the Vice President for Development and University Relations.*

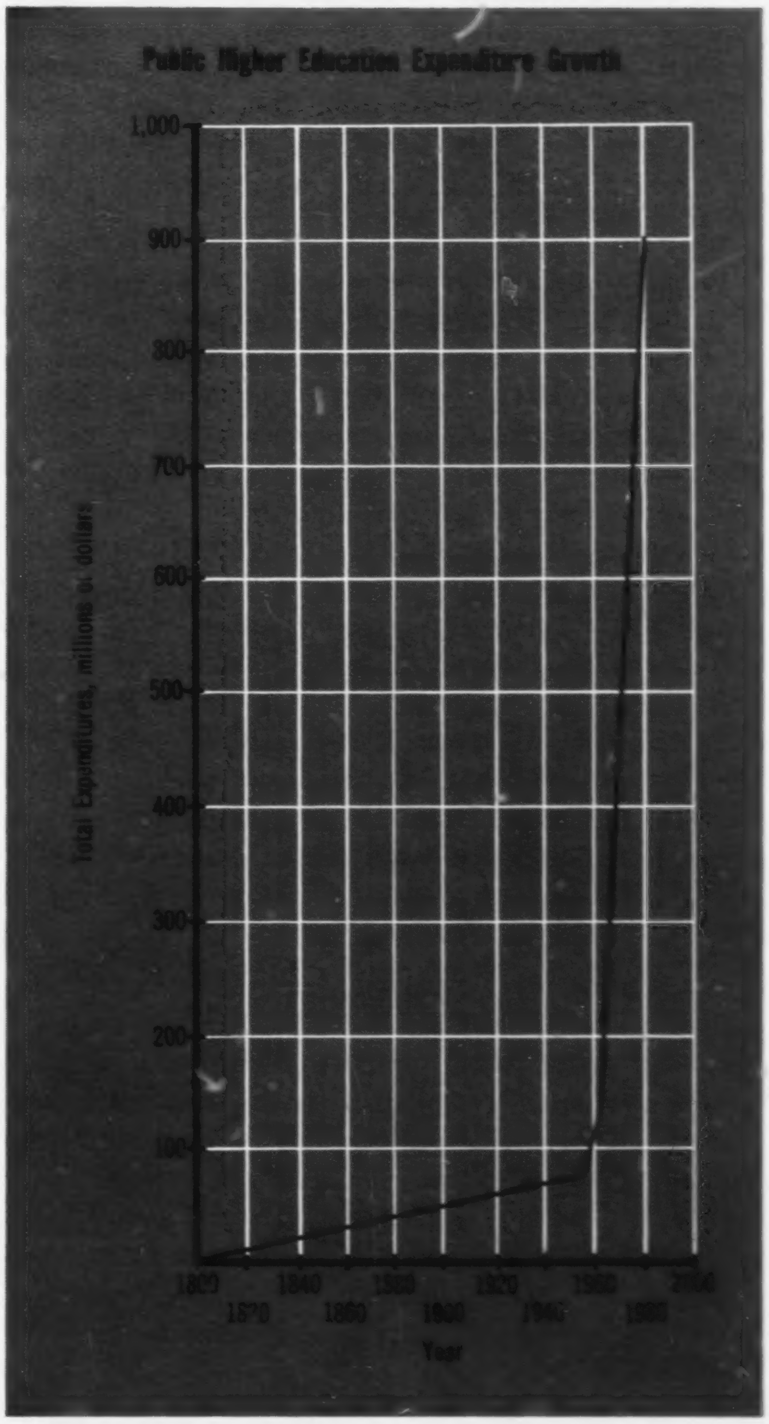
University development refers to the many activities necessary to procure federal funds and private gifts and grants. University relations refers to the many public- and alumni-related activities which contribute to the public image of the university. Related to these two activities are the publications and printing services functions through which printed materials are produced for in-house use and for public distribution in connection with alumni and public relations efforts. These services are essential to the development and university relations activities.

Planning

THE OHIO SYSTEM of public higher education had its origin with the establishment of Ohio University in 1804. By 1962, the system had grown to 6 universities and 32 academic centers. It had an enrollment of 81,000 and annual expenditures of $147-million, including $47-million in state support funds. In enrollment and expenditures, the system has continued to grow exponentially, as the graphs below and at right show.

In 1967/68, the system included 12 universities, 18 branches, 12 academic centers, 4 community colleges,





and 4 technical institutes. Expenditures were $471-million, including $148-million in state appropriations, and student enrollment totaled 219,000. Budgeted expenditures for 1968/69 exceeded $500-million for an estimated enrollment of 240,000 students. Enrollments are planned to almost double by 1980 when 450,000 will be attending the public institutions of higher education in the state.

Ohio public higher education has become an extremely large system requiring vast investments of operating support as well as capital. As shown in the table at right, "State Capital Investment in Higher Education," the state has allocated $320-million in capital alone since 1963. It proposes to spend another $400-million between 1969 and 1975 to meet forecasted 1977 enrollment requirements. Even this is thought by the Board of Regents to be modest compared to need. It should be noted that the institutions requested about $1-billion more than this figure. The table shows the capital invested in each institution for the years 1946 to 1963 and 1963 to 1969, plus that proposed for 1969 to 1975.

Considerable coordinated planning was required at each institution to establish and achieve the huge facility which today is public higher education in Ohio. Given the same length of time (165 years), it would be reasonable to expect that an equal result could be obtained in the future. However, enrollments are projected to almost double in the next 11 years. In other words, the educational capability of the whole system of public higher education which has evolved since 1804 in Ohio will be duplicated by 1980. Quite obviously, the system of planning and coordination that successfully built the present capability in 165 years cannot achieve the same result in only 11 years. This has required and will continue to require a great investment by the State of Ohio. It is not unusual that a single generation of taxpayers would find this a difficult burden since it will more than double the system built by all previous generations in Ohio.

A system of universities growing at the rate of public higher education in Ohio must be provided with coordinated direction in order to achieve a common purpose. This was recognized by the university presidents when they voluntarily formed the Inter-University Council. These voluntary relationships, however, were not able to provide sufficient objectivity and strength of direction. So in 1963, the Ohio Legislature established a coordinating group for the state system of public higher education and designated it the Ohio Board of Regents.

STATE CAPITAL INVESTMENT IN HIGHER EDUCATION
(Dollars in Thousands)

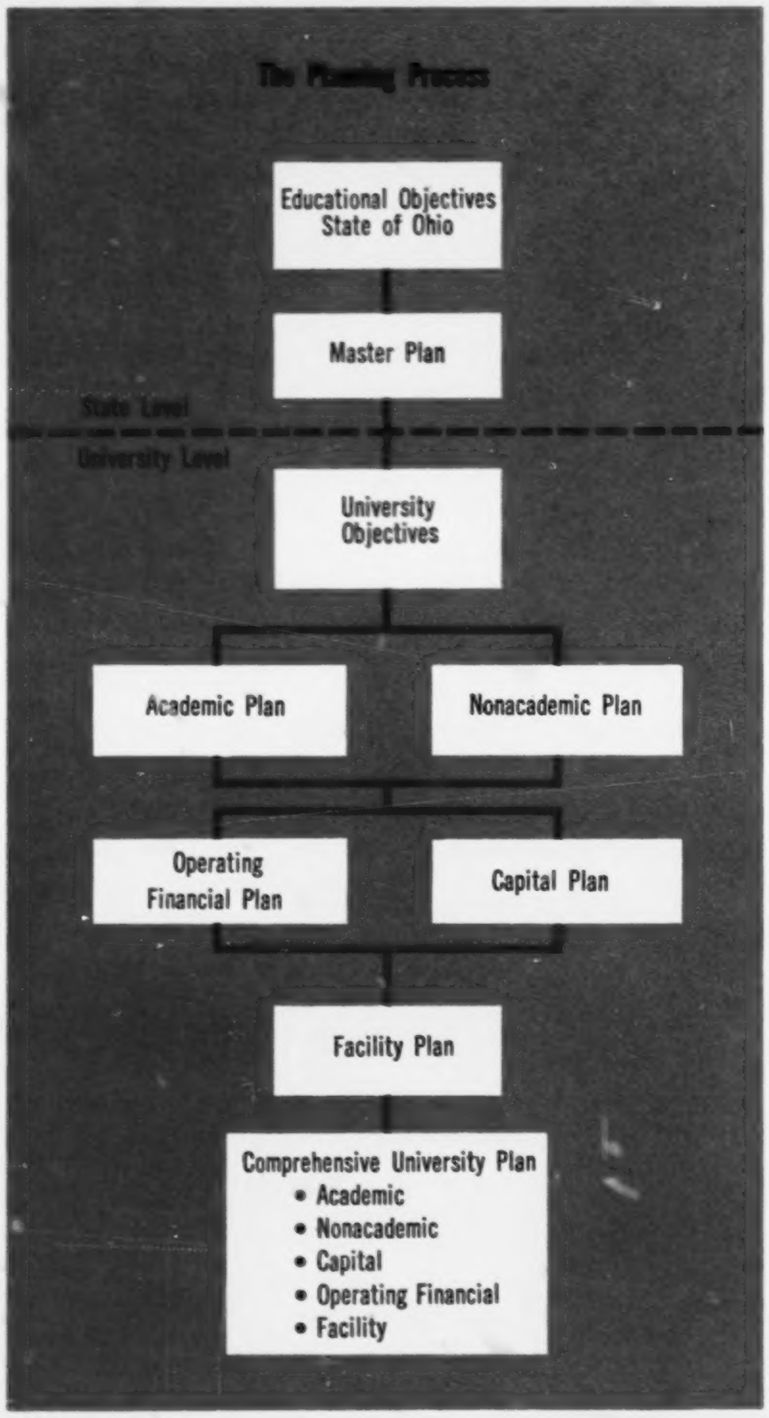
			1969-1975	
	1946-1963	1963-1969	UNIVERSITY REQUESTED	REGENTS PROPOSED
Universities				
Akron		$ 12,000	$ 86,500	$ 19,000
Bowling Green	$ 10,882	14,739	55,400	9,000
Central	3,176	5,779	28,600	7,000
Cincinnati		21,831	39,200	26,000
Cleveland		44,750	110,000	60,200
Kent	13,479	19,037	79,000	14,000
Medical College of Ohio		7,500	93,200	25,000
Miami	12,579	14,500	59,700	9,000
Ohio State	70,166	73,570	259,700	45,000
Ohio	13,575	18,000	91,100	14,000
Toledo		12,000	125,900	14,000
Wright		9,000	45,300	18,000
Youngstown		5,000	61,800	29,500
Total	$123,857	$257,706	$1,142,900	$289,700
Branches		$ 36,541	$ 56,600	$ 37,900
Technical Institutes				
Clark		$ 2,000	$ 5,800	$ 1,500
Columbus		3,200	12,700	6,000
Jefferson		1,800	3,200	1,000
Penta			4,800	4,000
Total		$ 7,000	$ 26,500	$ 12,500
Community Colleges				
Cuyahoga		$ 9,850	$ 54,500	$ 10,000
Lakeland		2,500	110,800	6,000
Lorain		6,000	18,200	4,000
Sinclair		200	21,300	6,000
Total		$ 18,550	$ 105,800	$ 26,000
Other (not yet operational)				
Agricultural Center			$ 8,200	$ 3,000
Four County Community Colleges			10,000	2,000
Cincinnati Technical Institute			2,000	10,000
Total			$ 20,200	$ 15,000
Research and Development				$ 20,000
Grand Total	$123,857	$319,797	$1,352,000	$401,100

The Board of Regents was intended to provide coordination to the development of the system of public higher education. One of the Board's immediate objectives was to develop a Master Plan defining objectives, scope, and long-range plans in terms of academic programs and facilities for the whole public system of higher education as well as for individual universities. The Master Plan was completed in 1965, reviewed with the universities that year, and formally adopted and published in June 1966. Individual universities were expected to develop programs compatible with the Master Plan.

The planning of university affairs is a complex process. Planning at one institution of higher education can readily affect other state universities, especially those nearby. The growth pressures and inducements made to well-known, high-capability universities are great. Without a well-structured plan, these pressures can result in a minimal sense of direction and great loss of opportunity. In addition, the state has only a limited amount of money available for higher education. Thus, it must somehow ensure that funds are used in a manner which will provide maximum education for the dollars available. Planning facilitates the achievement of this objective.

A great amount of planning is necessary to ensure employee and facility resources are available and continuously functioning in a manner consistent with the educational purposes of the university. In addition, successful planning ensures that quality and quantity of education are provided with minimal expenditures.

The diagram shown below is a highly simplified representation of how planning should address the needs of the system of public higher education. The extent to which this sequence is followed has a critical effect upon the degree of coordination obtained, the quality of the final result, and whether the most economical system is developed. Each step of the planning process shown in the diagram can be described as follows:



- Educational objectives of the state must be identified, and a Master Plan which provides a method of obtaining these objectives in terms of educational programs and plans must be developed.
- University objectives must be identified in terms of education, public service, and research. They must accommodate or be in context with the state objectives and the Master Plan. Private sources of funds allow some universities to entertain additional purposes. This enables certain distinctive and desirable differences between the universities.
- The academic plan should represent a structured approach to achieving the university's objectives in terms of curricula, organization, and staffing. This plan reflects the considered needs of society and is responsive to enrollment forecasts.
- The nonacademic plan supports and to a considerable extent enables the academic plan to be effected. Included here are plans for the development of: computer facilities and services; accounting and financial organizations and systems; personnel services and organization; plant operations and maintenance including organization, services, and facilities; student affairs activities; admission and registration systems; and dormitory, dining facilities, and other auxiliary service enterprises.
- The operating financial plan and the capital plan translate the various plans into dollars and identify sources of income and the expenditures which will be required. Unless this is done, there is no assurance that the plan will be implemented, or if it is, that sufficient financial support will be available.
- The facility plan is a detailed representation of the buildings and facilities required to provide implementation of the academic and nonacademic plans. Usually this includes an architect's long-range plan for the development of the campus grounds.
- The comprehensive university plan integrates the academic, nonacademic, operating financial, and facility plans to obtain the objectives of the university. Since the plan's recommendations for buildings and staffs carry implications for the future, it is necessary that it encompass a period of years.

Appraisal of current operations

The creation of the Board of Regents in 1963 as an effort to provide coordination to the development of public higher education in Ohio was an excellent step. This group has successfully imparted a degree of order to the task through its initial development of a Master Plan. However, much remains to be done.

A most serious deficiency in the administration of the universities is the absence of a function which coordinates the development of well-structured and comprehensive university plans. Considering that several universities have requested capital funds in excess of $100-million over the next three biennia, it is significant to note that not a single university in the system has based its request on a well-structured plan.

The existence of planning at the state-supported universities in Ohio is shown in the table below. This table also indicates that major aspects of planning are now performed by different positions at each university. At Bowling Green State University, the President is heavily involved, and at Ohio State University, a campus planning function as well as an academic officer perform aspects of planning. Cleveland State University, though one of the younger universities in the system, is the only one which has initiated a planning division to address its comprehensive planning requirements. However, this function was only recently established and is not fully developed. One other institution, the University of Toledo, has established a planning division at the officer level, but the scope of its operations is narrow.

The typical university has a documented capital plan, since one is required by the Board of Regents. However, it is not based upon an academic plan together with a nonacademic plan. Academic plans, if documented at all, are seldom more than compilations of the aspirations and wishes of the various departments involved. The objectives of the university are not addressed by an integrated academic plan.

Despite the absence of an academic plan, a university usually has a topographical layout of its campus grounds showing the proposed location of buildings serving specific academic needs. Often, a tabulation has been developed which portrays the capital required to complete such a "plan." But the typical university will not have a financial plan for more than one to two years ahead. This can mean that a university will successfully complete a building construction program but lack the funds to staff the facilities.

Although a state Master Plan was developed in 1965 by the Ohio Board of Regents, it has not been updated since. Thus, the universities do not have a current basis for developing their plans in concert with the objectives for the system as a whole. Wright State University, Cleveland State University, the University of Cincinnati, the University of Akron, Youngstown State University, and the University of Toledo were not part of the state system in 1965.

The universities are now following the state Master Plan when it is consistent with their own interests and objectives. However, the language is often vague and allows individual determination of intent. In addition, no implementing authority was granted to the Board of Regents at the time the Master Plan was developed. The current Master Plan is certainly better than no plan, but it is difficult to attach much value to it when the implementation authority has not been designated.

Until recently, Ohio law provided that an Ohio high school graduate must be accepted for enrollment at a state-supported university. This law by itself could prevent implementation of a state Master Plan. In 1969,

UNIVERSITY PLANNING APPROACH

	ASPECTS OF PLANNING PERFORMED						ORGANIZATION RESPONSIBLE FOR PLANNING					
UNIVERSITY	DOCUMENTED ACADEMIC PLAN	DOCUMENTED NONACADEMIC PLAN	CAPITAL PLAN	FACILITY PLAN	FINANCIAL PLAN	DOCUMENTED COMPREHENSIVE PLAN	PLANNING DIVISION	PRESIDENT	BUSINESS AND FINANCE	PHYSICAL PLANT	CAMPUS PLANNING	ACADEMIC
Akron	No	No	Yes	Yes	No	No	X					
Bowling Green	No	No	Yes	Yes	No	No		X				
Central	No	No	Yes	Yes	No	No			X			
Cincinnati	Yes	No	Yes	Yes	No	No			X**			X
Cleveland	Yes	No	Yes	Yes	No	No*	X					
Kent	Yes	No	Yes	Yes	No	No			X		X	
Miami	No	No	Yes	Yes	No	No			X			
Ohio State	No	No	Yes	Yes	No	No					X	X
Ohio	No	No	Yes	Yes	No	No			X		X	
Toledo	No	No	Yes	Yes	No	No			X			
Wright	No	No	Yes	Yes	No	No			X	X		
Youngstown	No	No	Yes	No	No	No		X		X		

* Under development.
** Planning Division recently discontinued.

it was changed and enrollment limits were designated for Kent State University, Miami University, Ohio State University, Bowling Green State University, and Ohio University.

One of the main themes of the current Master Plan is that the senior institutions of Kent State University, Miami University, Ohio State University, Bowling Green State University, Ohio University, and Central State University be developed so their central campuses primarily serve upper-division and graduate students. The major load of the enrollment expansion of lower-division students would be carried by the branch campuses. This is not occurring at the present time, since central campuses are expanding to accommodate enrollments as needed.

Recommendations for improvement

The needs of the public system of higher education are vast in terms of the financial, facility, and personnel resources which must be provided in the years immediately ahead as well as in the long-range future. The following recommendations will enable Ohio's universities to meet these needs in a manner which assures maximum benefit from the dollars expended.

1. *Modify and update the Master Plan for State Policy in Higher Education and designate state-wide implementing authority and responsibility.*

The need for the coordinated development of Ohio's public system of higher education was recognized with the formation of the Board of Regents in 1963. Its first task was to develop a state Master Plan. This recommendation reaffirms the importance of a Master Plan and urges that it be reviewed and modified, then strongly implemented.

Ohio's Master Plan, published in 1966, is out of date. In addition, the plan does not contain sufficient specifics relative to many of the universities, particularly the newer ones—the University of Toledo, Cleveland State University, the University of Akron, Youngstown State University, Wright State University, and the University of Cincinnati—which joined the system in 1967. This has required each university to determine its own objectives together with plans for meeting them.

The separate determination of objectives by each university, regardless of their excellence, can result in a poorly integrated system of higher education. Further, a university's long-range plan forms the basis for recruitment and development of staff. Serious personnel disruption can result from commitments later found to be in conflict with the state system.

To a considerable extent, the Master Plan was based upon the premise that the main growth in lower-division enrollment would be accommodated at the branches. The central campuses of the then existing five senior universities were to become institutions for upper-division and graduate-level students. The table below, "Present, Planned, and Master Plan Enrollments for Ohio's Senior Universities," illustrates that this is

PRESENT, PLANNED, AND MASTER PLAN ENROLLMENTS
OHIO'S SENIOR UNIVERSITIES

UNIVERSITY	LEVEL	ACTUAL 1968/69 ENROLLMENT		1980 MASTER PLAN ENROLLMENT		1980 UNIVERSITY PLANNED ENROLLMENT
		HEAD COUNT	%	HEAD COUNT	%	
Bowling Green	Lower Division	7,340	55	5,500	38	
	Upper Division	4,741	36	6,950	48	
	Graduate/Professional	1,180	9	2,000	14	
	Total	13,261	100	14,450	100	16,900
Kent	Lower Division	9,105	45	7,000	35	
	Upper Division	8,187	41	10,000	50	
	Graduate/Professional	2,704	14	3,000	15	
	Total	19,996	100	20,000	100	35,300
Miami	Lower Division	6,459	57	5,500	38	
	Upper Division	4,037	36	7,000	48	
	Graduate/Professional	847	7	2,000	14	
	Total	11,343	100	14,500	100	15,300
Ohio State	Lower Division	18,774	45	11,000	28	
	Upper Division	13,521	32	13,000	33	
	Graduate/Professional	9,611	23	15,000	39	
	Total	41,906	100	39,000	100	52,400
Ohio	Lower Division	9,103	52	7,000	35	
	Upper Division	6,830	39	10,000	50	
	Graduate/Professional	1,622	9	3,000	15	
	Total	17,555	100	20,000	100	24,900
Total		104,061		107,950		144,800

not occurring, nor is it generally planned to occur. It was not expected that the Master Plan enrollments—either in total or in mix—between lower-division, upper-division, and graduate/professional would be achieved by 1968/69. However, Ohio State University has already exceeded the planned total enrollment, and Kent State University is very close to the planned level. According to the Master Plan, the total enrollment of the five senior universities was projected at 107,950 in 1980. But actual enrollment totaled 104,061 in 1968/69 and is estimated to reach 144,800 by 1980, based upon forecasts contained in capital plans submitted to the Board of Regents. This emphasizes that the Master Plan is no longer valid and there has been little implementation of the plan.

Furthermore, at neither Ohio State University nor Kent State University does the enrollment mix bear any resemblance to the Master Plan. Bowling Green State University is the only one actually planning to achieve Master Plan specifications in terms of percent of students in each level. However, even here the total enrollment will probably exceed the Master Plan specification for 1980. Furthermore, enrollment forecasts published in support of capital plans to the Board of Regents do not contain data by division level. Thus, the achievement of the Master Plan specifications on enrollment percentages in each level does not receive the emphasis it should. At this point, our concern is not whether lower-division expansion requirements are facilitated at either a branch or a central campus, but rather that a plan with definite specification exists and is being followed.

There is additional need to modify the Master Plan relative to the branches. The areas served are not well defined, and some branches now compete with one another for students. The Master Plan intent of lower-division expansion at branches is not a reality, since the Master Plan has not been strongly implemented.

There are many reasons for these conditions. However, the most important are the following:

- Until recently, state law did not allow enrollment limitations. Therefore, a university could not directly control its size, and implementation of enrollment specifications was prevented.
- There is no authority responsible for implementing the Master Plan, and universities are not bound to abide by it.
- Conditions have changed since the Master Plan was developed, but it has not been modified.

Whatever the cause, the present Master Plan does not provide a timely basis for the continued, coordinated development of the public system of higher education. Its updating should be given a very high priority. It is also necessary that the Master Plan be maintained current on at least an annual basis.

The mere existence of an updated Master Plan will not enable coordinated development of the system of higher education. This must be accompanied by the designation of authority for its implementation.

2. Develop a system of comprehensive long-range university planning.

Comprehensive long-range planning at a state-supported university should begin with guidelines as established in a state Master Plan. Within these guidelines, the university should determine objectives, develop a consistent academic plan, and forecast enrollment.

Care must be exercised in order that the academic plan is not simply a summation of departmental plans. Departmental plans are a part of the whole but should not determine it. A nonacademic plan, including the support organizations and operations, can then be made which enables and reflects the academic plan. A capital plan should be developed which encompasses the requirements as determined by the academic and nonacademic plans and recognizes the existing facilities. Finally, an operating financial plan should be prepared which integrates the academic plan, enrollment forecast, nonacademic plan, and capital plan into an annual requirement for income and expenditures. A system of program-planning-budgeting developed by Ohio State University would provide an excellent basis for the operating financial plan.

At this point, it may be that either the organizational or the financial requirements are unrealistic in terms of practical judgments on the availability of funds. As a result, the whole plan must be modified. However, programs which must be cut should be placed on a priority list which, if maintained current, will enable immediate response to changes in the availability of funds. The comprehensive plan should encompass a 10-year period, but its definition should be much less precise beyond 5 years. This comprehensive plan, including all of its components, should be continuously maintained current on at least an annual basis.

3. Establish a comprehensive planning department.

This would consolidate the existing planning functions—variously termed campus planning or facility planning, the university architect, institutional research, and the scheduling operations of the registrar. In addition, it would broaden the approach to identify basic objectives and coordinate development of an integrated academic, facility, operating, and capital plan to meet these objectives.

To accomplish comprehensive planning, certain elements must be developed in considerable depth.

- Academic Planning—Curriculum plans for the future must be outlined together with requirements for special classrooms, laboratories, and other facilities. In addition, the number of students, new course offerings, and faculty must be projected. Also, recruiting programs must be developed to provide the faculty needed to carry out future academic plans.
- Nonacademic Planning—Supporting staffs and operations such as accounting, personnel, bookstores, computers, physical plant, security, and the like must be developed in accordance with the academic plan.
- Facilities Planning—The university's available facilities and their use determines whether academic plans can be implemented. Facilities for higher education are costly and require a great amount of time to create. For this reason, they must be designed to meet long-range needs. This aspect of planning should include classrooms and laboratory facilities as well as supporting facilities.
- Operational and Fiscal Planning—To assure adequate support, an operating plan must be developed to identify financial and administrative needs created by the academic, nonacademic, and facilities plans. Here, capital investment must be scheduled and operating expenditures determined. The time span in this plan should coincide with those of academic, nonacademic, and facilities plans.

The foregoing functions represent long-range aspects of planning. In addition, certain short-range planning is necessary. A most important element is planning the means by which utilization of the university's instructional facilities can be increased. Here a comprehensive systems approach should be used to schedule the use of classrooms in a manner which considers faculty availability, student requests, courses offered, and classroom availability. The scheduling function is usually performed as one activity of the registrar's office.

As recommended in the Organization section of this report, the proposed planning department would be administered by a vice president. Planning functions reporting to him would include the following:

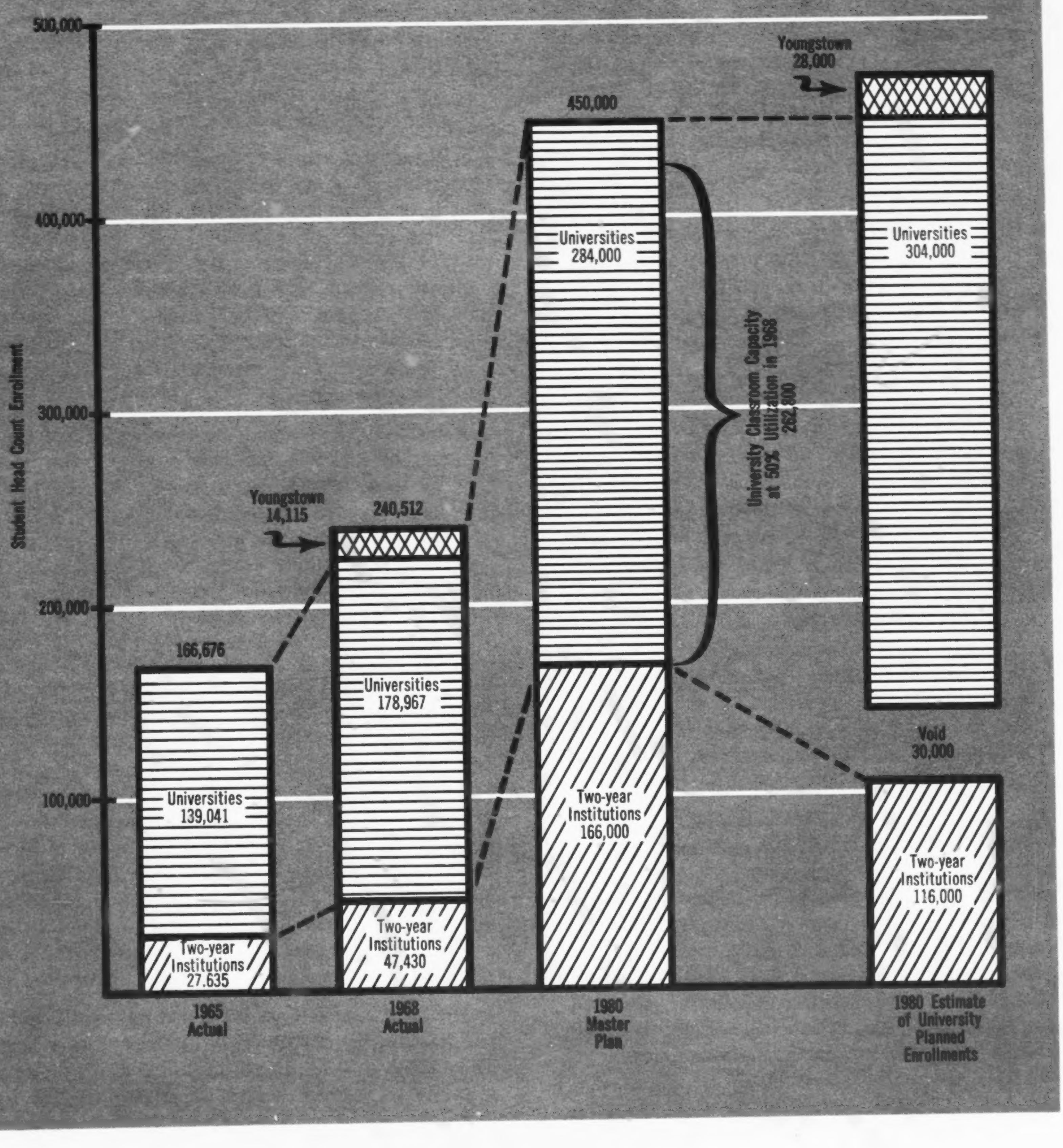
- Facility Planning would be concerned with provision and use of facilities (including land, buildings, and space) once it has been concluded that a program will be undertaken. Now, this is often performed by a university architect or a campus planning function.
- Long-Range Planning would make certain the objectives of the university were identified. Further, it would coordinate the development of long-range academic, administrative, facilities, capital, and operational plans to meet these objectives.
- Scheduling would be concerned with short-range planning of the use of faculty, classrooms, and instructional courses to serve the needs of students. Full familiarity with and appreciation of the intricacies and problems of registration and scheduling would be essential to the planning operation. This function will be responsible for effecting optimum utilization of space through all available methods including computerized scheduling and space planning.
- Institutional Research develops basic data about the university which would be needed by all functions involved in planning. Included will be student enrollment forecasts, office and classroom space need forecasts, and information required for particular project purposes. It is intended all departments requiring planning data will have a common and authoritative information source made available to them.

4. *Attach a high priority to the development of a comprehensive university plan and evaluate current capital improvement requests against it.*

Capital improvement requests covering a six-year period are prepared by each university and submitted to the Board of Regents. Capital requests for the period 1969 to 1975 for the public system of higher education total almost $1.4-billion. The Board of Regents estimated that about $725-million of this was not required. After practical consideration of fund availability, the Regents recommended to the Governor and the Legislature that $401-million be provided.

The capital requests as submitted by the universities are described by one president as simply "log rolling." They do not see evidence of an implemented state Master Plan, and thus several universities feel the need to ask for more than they require as part of a protective

Comparison of Master Plan and University Planned Enrollments



device. Unfortunately, this loose plan is often the only program that the university has. As mentioned earlier, no university has a comprehensive plan supporting its capital needs.

The graph on the facing page illustrates actual enrollments in the public system of higher education in 1965 and 1968. In addition, it portrays the 1980 enrollments as specified by the Master Plan and as estimated by the universities themselves. All current universities were included in the published plan in one way or another, except Youngstown State University, which at that time was part of the private system and not expected to join the state system.

The Master Plan specified that 284,000 students would be enrolled in the universities and 166,000 in the branches, community colleges, and technical institutes in 1980. However, an estimate of the universities' total planned enrollment is 304,000 and for the two-year institutions, only 116,000. The latter is 50,000 less than originally specified in the Master Plan. This could indicate a reduction in forecasted need, an error of forecasts, or inadequate emphasis on the development of the two-year institutions.

Also, the graph shows an estimate of total classroom capacity if the universities achieve the space utilization standard of 50% established by the Board of Regents. This is indicated as 262,800 students, or only 22,000 less than that required by 1980 according to the Master Plan. Since the 1968 enrollments in universities other than Youngstown State University were only 178,967, this would indicate that almost 84,000 additional students could be educated in existing classrooms. This would certainly be a positive achievement and is worth considerable planning effort on the part of each university. It must be noted, however, that classrooms are only a part of the facilities required by a university since it must also provide for faculty and administrative offices, special-purpose educational facilities, warehouses, and the like.

The Master Plan assumed private schools would double their enrollments between 1965 and 1980 to accommodate 200,000 students. Since Youngstown State University was part of the private system and is planned to little more than double its enrollment, its intended 1980 capacity was not considered as relieving any part of the need to educate 450,000 students in public higher education by that date.

A comprehensive university plan must be immediately developed by each university. The absence of such plans is not only detrimental to the interests of the individual university but also to the system as a whole. It is impossible for appropriate and sound judgments to be made about the capital needs of the system of public higher education when they are not based upon a university planning structure.

Any effort to quantify the benefits to be realized by the implementation of comprehensive planning will never be accurate until the actual plans are complete. However, an extremely conservative estimate would be that 5% to 10% of the $725-million, or $36-million to $50-million, could be saved or applied to additional needs. Here we are not addressing the level of capital required, but rather the level of refinement which is possible. The effect of improved space utilization is discussed in the Space Utilization and Registration section of this report.

5. *Amend Ohio statutes so universities are provided with a method of limiting lower-division enrollment.*

Until recent legislation established enrollment limits at five universities, every high school graduate had the right to enter the Ohio public university or college of his choice. This made planning extremely difficult for the universities and contributed to the obsolescence of the current Master Plan in certain instances. For this reason, it is recommended that upon completion of the proposed updated Master Plan, enrollment limits consistent with the plan be established for all institutions.

Space Utilization and Registration

SPACE UTILIZATION and registration are related in a close, interdependent manner. The optimum use of available instructional classrooms and teaching laboratories is determined primarily by the effectiveness of student registration procedures. The scheduling of faculty, courses, and sections into existing educational facilities establishes the utilization plan. The actual registration of students into these courses and sections determines the level of success in achieving the plan. Here, the needs of the student body must be coordinated with the planned schedule of courses and sections.

The level of space utilization attained at each university provides a useful measure of the return on the capital investment in instructional facilities. For this reason, the management of each state-supported institution of higher education is anxious to make optimum use of existing facilities. Current utilization is important in determining enrollment limits, instructor load, short-range plans, and decisions related to academic offerings as well as facilities remodeling. Space standards and utilization goals together with enrollment projections by level and type of course must form the basis for developing and justifying future plans of expansion and the related capital requirements.

The student registration process requires interaction among the academic department chairmen, the admissions office, and the registrar. This process involves the following activities:

- Accepting student enrollments
- Preparing course and section schedules
- Assigning classroom and laboratory space
- Scheduling faculty
- Processing student registrations
- Scheduling students to classes
- Assessing student fees
- Activating student status upon fee payment
- Processing student requests for schedule changes

Although all universities must attain the same registration objectives, various organizational and procedural methods are employed. For example, at the University of Akron, a pre-registration system conducted by mail is used for all except freshmen students. Advance registration is also practiced. Thus, when a student registers for the spring quarter, he also registers for the summer and fall quarters. The open registration period of three days prior to the beginning of classes each quarter is restricted to processing student schedule change requests. The student must visit the registrar's office and meet with his counselor to resolve schedule problems. All classroom and teaching laboratory space is controlled and assigned by the registrar. This office makes the final determination of the time and place of class meetings if the preference of the department chairmen cannot be met.

On the other hand, a much different procedure prevails at Kent State University. Each college is assigned an initial block of classroom space for scheduling the time of its classes. Unused space and time periods are

STUDENT STATION UTILIZATION PERCENTAGES — 1967/68

TIME PERIOD	AKRON		BOWLING GREEN		CINCINNATI		CENTRAL		CLEVELAND		KENT	
	CLASS	LAB	CLASS	LAB	CLASS	LAB	CLASS	LAB	CLASS	LAB	CLASS	LAB
8:00 a.m. - 9:00 a.m.	27.2	17.0	36.0	48.3	36.3	7.6	20.7	10.3	30.6	16.3	39.0	37.1
9:00 a.m. - 10:00 a.m.	40.0	32.3	38.6	61.3	43.0	14.7	25.9	10.6	39.7	20.9	56.0	46.1
10:00 a.m. - 11:00 a.m.	43.6	35.0	43.3	55.9	43.0	17.4	20.6	11.7	45.4	25.8	36.1	39.6
11:00 a.m. - 12:00 noon	40.4	66.6	37.1	49.1	40.0	11.2	21.4	8.9	44.2	21.6	62.4	37.6
12:00 noon - 1:00 p.m.	24.1	12.1	29.0	32.8	21.5	4.0	8.4	3.6	44.5	16.8	49.8	17.6
1:00 p.m. - 2:00 p.m.	43.7	25.5	40.0	52.6	21.8	8.6	16.9	12.6	44.7	24.8	53.4	37.6
2:00 p.m. - 3:00 p.m.	36.1	42.4	35.7	55.0	36.5	24.7	23.7	16.4	31.0	23.0	34.9	40.4
3:00 p.m. - 4:00 p.m.	27.3	37.3	30.2	39.1	22.4	24.2	20.9	6.2	27.1	34.3	35.9	42.4
4:00 p.m. - 5:00 p.m.	8.9	23.5	11.6	20.3	13.7	16.8	6.2	3.5	19.7	19.7	17.0	28.2
8:00 a.m. - 5:00 p.m. Average	32.3	32.4	33.5	46.1	30.9	14.3	18.3	9.3	36.3	22.6	43.8	36.3
5:00 p.m. - 6:00 p.m.	9.0	5.8		0.2	4.8	2.6	10.0	5.2	3.2	14.6	3.3	7.6
6:00 p.m. - 7:00 p.m.	29.8	19.9	5.1	2.4	11.5	0.8	6.1	5.2	32.5	10.7	1.0	5.7
7:00 p.m. - 8:00 p.m.	29.1	21.9	9.4	7.8	23.5	2.5	9.8	5.7	32.6	12.6	10.2	9.2
8:00 p.m. - 9:00 p.m.	24.3	18.9	7.6	6.3	19.7	2.8	7.2	3.2	22.4	13.3	10.0	8.3
9:00 p.m. - 10:00 p.m.	13.7	9.3	7.1	3.4	12.0	2.7	0.2		22.3	12.3	3.8	4.4
5:00 p.m. - 10:00 p.m. Average	21.1	15.0	5.8	4.0	14.4	2.3	5.1	3.8	22.6	12.9	5.7	7.0
MONDAY												
8:00 a.m. - 5:00 p.m.	34.8	30.8	34.9	53.3	34.7	14.6	22.8	12.1	38.1	23.6	50.0	37.9
5:00 p.m. - 10:00 p.m.	27.7	18.9	7.1	5.3	19.8	3.1	5.2	3.0	26.1	18.8	10.2	7.4
TUESDAY												
8:00 a.m. - 5:00 p.m.	30.2	40.7	31.0	46.9	26.4	16.4	12.4	7.7	38.2	22.6	38.9	35.1
5:00 p.m. - 10:00 p.m.	25.2	21.6	9.0	4.4	16.3	2.3	7.0	7.5	30.2	16.0	5.3	12.1
WEDNESDAY												
8:00 a.m. - 5:00 p.m.	37.0	30.7	34.0	39.4	34.7	13.6	23.5	10.5	32.1	20.2	48.0	39.5
5:00 p.m. - 10:00 p.m.	26.0	14.8	7.5	5.6	18.9	1.7	4.9	2.8	26.5	14.2	7.9	8.2
THURSDAY												
8:00 a.m. - 5:00 p.m.	28.6	42.7	36.8	50.2	26.4	15.8	12.1	8.2	36.8	22.9	38.2	34.3
5:00 p.m. - 10:00 p.m.	24.6	19.8	5.6	4.8	16.7	4.4	5.8	4.9	29.8	12.8	4.4	6.3
FRIDAY												
8:00 a.m. - 5:00 p.m.	31.2	17.1	30.7	40.5	32.3	11.3	20.7	7.9	36.3	23.5	44.2	34.6
5:00 p.m. - 10:00 p.m.	2.2		0.1		0.3		2.4	1.0	0.3	2.7	0.5	1.1
SATURDAY												
8:00 a.m. - 5:00 p.m.	0.7	2.5			2.8	0.2	1.3	0.2	0.1		3.0	1.9
5:00 p.m. - 10:00 p.m.							0.6					

placed in a central pool under the control of a Director of Records. He then fills requests for additional space out of this central pool. Mass registration is employed for the normal academic year. Students register during three three-day periods. There is also mass registration for the two summer sessions. No mail, pre-registration, or advance registration procedures are employed.

The registration methods employed by the other 10 state universities in Ohio are various gradations of the two procedures cited.

The degree of data processing used to support these registration methods varies widely. The University of Akron, Bowling Green State University, Ohio University, and Miami University use data processing to eliminate much of the clerical effort involved. At Miami University, the computer is employed to schedule students to classes. Mark-sensed registration forms which are machine-processable are utilized at Ohio University, Miami University, and Bowling Green State University. Manual procedures are used almost exclusively at Central State University and Kent State University. Combinations of manual and automated systems are used at the other universities.

No common system of registration is used by the state-supported universities in Ohio. Some still use mass registration methods, while others pre-register by mail and maintain daily records on a computer. Advance registration and the use of open registration for student schedule changes are only practiced by few institutions. Preference in securing enrollment in requested courses is given to upperclassmen.

As shown in the table below, "Student Station Utilization," classroom utilization during the regular academic week of Monday through Friday from 8:00 a.m. to 5:00 p.m. varies from lows of 18.3% at Central State University and 17.4% at Wright State University to a high of 43.8% at Kent State University. Laboratory utilization during the same period ranges from a low of 9.3% at Central State University to a high of 46.1% at Bowling Green State University. The highest utilization of classroom space, 62.4%, is achieved by Kent State University during the fourth period of instruction from 11:00 a.m. to 11:50 a.m. on weekdays. The highest utilization of laboratory space, 66.6%, is attained by the University of Akron during the 11:00 a.m. to 12:00 noon period.

STUDENT STATION UTILIZATION PERCENTAGES — 1967/68

	MIAMI		OHIO STATE		OHIO		TOLEDO		WRIGHT		YOUNGSTOWN	
TIME PERIOD	CLASS	LAB	CLASS	LAB	CLASS	LAB	CLASS	LAB	CLASS	LAB	CLASS	LAB
8:00 a.m. - 9:00 a.m.	39.1	21.5	33.0	17.4	31.1	26.1	38.3	14.1	13.0	8.7	31.3	11.1
9:00 a.m. - 10:00 a.m.	48.6	26.3	40.1	26.5	43.6	28.1	43.5	21.7	17.3	12.1	39.8	14.2
10:00 a.m. - 11:00 a.m.	53.8	29.1	41.9	26.0	40.6	30.0	42.9	22.1	34.0	16.7	41.8	20.7
11:00 a.m. - 12:00 noon	50.4	24.7	41.6	20.4	34.7	27.0	40.0	15.1	21.0	15.3	39.8	29.5
12:00 noon - 1:00 p.m.	11.2	1.3	31.5	8.6	22.7	6.0	32.0	14.7	16.6	11.2	33.9	13.2
1:00 p.m. - 2:00 p.m.	46.3	36.2	40.9	21.4	39.2	33.0	35.6	18.9	9.2	12.3	36.7	28.2
2:00 p.m. - 3:00 p.m.	35.6	38.4	38.4	28.1	37.0	30.0	29.7	26.6	20.1	26.3	34.4	14.7
3:00 p.m. - 4:00 p.m.	21.8	30.8	29.0	26.5	29.4	22.5	23.3	23.5	16.3	28.6	25.5	17.3
4:00 p.m. - 5:00 p.m.	4.5	16.3	19.1	18.8	15.3	20.9	13.1	15.4	9.1	26.1	9.2	8.9
8:00 a.m. - 5:00 p.m. Average	34.6	25.0	34.8	21.5	32.6	24.9	33.2	18.8	17.4	17.4	32.5	17.8
5:00 p.m. - 6:00 p.m.	1.3	0.2	7.8	7.6	2.8	1.2	4.4	1.9	1.8	6.1	13.8	10.1
6:00 p.m. - 7:00 p.m.	0.3		2.4	0.6	0.8		9.7	4.7	1.2	2.4	17.8	10.1
7:00 p.m. - 8:00 p.m.	2.4	4.4	5.5	1.6	7.4	1.5	25.9	11.5	24.7	15.7	28.6	11.3
8:00 p.m. - 9:00 p.m.	2.1	4.4	4.2	1.6	4.5	0.8	21.1	11.2	19.8	13.0	24.8	5.8
9:00 p.m. - 10:00 p.m.	0.7	0.7	2.6	1.4	0.7	0.2	11.2	6.6	13.7	6.6	19.5	0.2
5:00 p.m. - 10:00 p.m. Average	1.4	1.9	4.1	2.4	3.2	0.7	14.4	7.2	12.2	8.8	20.9	6.5
MONDAY												
8:00 a.m. - 5:00 p.m.	40.2	25.1	36.9	21.8	36.6	24.6	37.5	21.3	22.2	15.5	34.4	20.6
5:00 p.m. - 10:00 p.m.	1.8	2.2	5.5	2.1	3.5		16.4	9.8	16.1	9.9	26.7	7.6
TUESDAY												
8:00 a.m. - 5:00 p.m.	27.4	29.5	32.2	22.5	27.8	26.1	30.7	22.4	20.6	21.3	31.0	16.0
5:00 p.m. - 10:00 p.m.	1.7	3.3	5.0	3.0	4.5	0.7	20.3	6.2	15.3	8.7	22.5	8.4
WEDNESDAY												
8:00 a.m. - 5:00 p.m.	39.3	27.2	37.6	21.9	36.9	26.5	34.8	20.1	2.2	17.3	34.0	20.1
5:00 p.m. - 10:00 p.m.	1.6	0.3	4.2	2.1	3.7	1.8	16.5	11.1	14.2	13.9	24.8	7.6
THURSDAY												
8:00 a.m. - 5:00 p.m.	29.0	24.0	32.5	21.6	27.8	26.0	29.2	19.6	22.0	17.3	30.5	16.0
5:00 p.m. - 10:00 p.m.	1.7	3.7	4.6	3.3	3.9	1.1	18.3	7.9	14.7	11.0	21.9	8.4
FRIDAY												
8:00 a.m. - 5:00 p.m.	37.3	19.1	34.9	19.7	33.9	21.2	33.5	10.8	20.1	15.8	32.5	16.2
5:00 p.m. - 10:00 p.m.	0.1		1.2	1.3	0.5		0.8	0.8	0.9	0.2	8.7	0.5
SATURDAY												
8:00 a.m. - 5:00 p.m.	0.3	1.6	0.8	1.0	6.3	3.8	4.0	2.1	0.1		5.3	2.5
5:00 p.m. - 10:00 p.m.											0.2	

Classroom utilization on Saturday and after 5:00 p.m. during the week is generally very low at the 12 universities. None of the universities makes any appreciable use of instructional facilities on Saturday. The University of Akron, Cleveland State University, the University of Cincinnati, the University of Toledo, Wright State University, and Youngstown State University are able to make significant use of their classroom facilities after 5:00 p.m., with the exception of Friday night. A general pattern of reduced daytime utilization is evident on Tuesday and Thursday. This pattern is particularly pronounced at Central State University and the University of Cincinnati. Almost no utilization of instructional space on Wednesday is unique to Wright State University. These patterns are a function of both student desires and faculty policies.

The state-supported institutions of higher education in Ohio currently contain 1,841 classrooms with 104,792 student stations and 1,329 instructional laboratories with stations to accommodate 31,331 students. A breakdown of these data for each university is given in the table below, "Classroom and Laboratory Capacity Statistics."

CLASSROOM AND LABORATORY CAPACITY STATISTICS — 1967/68

UNIVERSITY	CLASSROOMS	CLASSROOM STUDENT STATIONS	LABORATORIES	LABORATORY STUDENT STATIONS
Akron	104	6,435	44	1,282
Bowling Green	126	7,479	71	1,983
Cincinnati	201	12,192	204	3,744
Central	62	3,083	37	1,095
Cleveland	72	3,903	35	815
Kent	170	9,946	83	2,346
Miami	158	8,562	103	2,575
Ohio State	421	24,736	523	11,951
Ohio	206	11,658	103	2,566
Toledo	112	6,275	79	1,913
Wright	72	3,549	30	824
Youngstown	137	6,974	17	237
Total	1,841	104,792	1,329	31,331

Appraisal of current operations

In 1969, the Board of Regents established a student station utilization goal for classrooms of 50%. This replaced the earlier objective of 64%. With this as an attainable goal, the existing classroom space can theoretically accommodate over 262,000 students. Since head count enrollments of the main university campuses for 1980 are forecast at 284,000, instructional space currently exists to meet all but 22,000 of the enrollment needs. This estimate should not be considered a finite expression of existing capacity but rather as an indication of a condition which must be fully assessed prior to additional expansion of classroom facilities.

The previous statistics are conclusive evidence that current utilization of instructional space is low. The causes of this low level of utilization are:

- Faculty teaching load policies which restrict the scheduling and use of space.
- Scheduling of classes by personnel not skilled in the requirements for planning large, complex systems.
- Inadequate systems of scheduling classes.
- Low enrollments.

Improved scheduling of faculty, students, and classes, plus close control of space assignments for instructional purposes are therefore required to accommodate greater student enrollments in the existing instructional space.

It is difficult to reconcile the low level of student station utilization with capital improvement requests totaling $1.4-billion. These requests have been submitted by the universities to the Board of Regents in anticipation of student enrollments in the autumn of 1977. However, it must be noted that these requests address much more than simply classroom space requirements. The Board of Regents analyzed these requests and determined that $725-million would be sufficient through June 30, 1975. As a practical adjustment to the availability of funds, the Board of Regents requested an appropriation of $401-million for the six-year period from July 1, 1969, to June 30, 1975. This sum will satisfy only 55% of the total needs estimated by the Board of Regents.

The existing space utilization goal of 50% is not used as an important factor in the planning process at each university. Reporting of space utilization statistics to the Board of Regents is being performed in a mechanical fashion. The statistics are not affecting the capital facilities requests, nor are they initiating formal plans of achievement at each of the universities.

Although Miami University, the University of Akron, Bowling Green State University, and Ohio University have established a central control over instructional space and classroom and laboratory scheduling, no university has fully recognized the planning impact of improved space utilization. Most not only have failed to recognize the planning implications of space utilization, but also have divided the responsibility for controlling and scheduling instructional space. Instructional space considered available only to the business school, geology department, music school, to mention a few, is not an uncommon situation. Instructional space must be considered university space available to meet any need prevalent at the time.

All universities are utilizing data processing to some degree in registration. However, much greater benefits are yet to be obtained from the computer. Class scheduling, reduced clerical efforts in the registrar's office, and further automation of fee collection are still fertile application areas. Existing registration procedures do not afford the degree of speed, control, and flexibility essential for maximum student service and optimum space and faculty utilization. Until greater use of automation is achieved, large amounts of clerical work and inefficient classroom scheduling will persist.

Sufficient lead time to effectively schedule instructional space is lacking where the universities are not fully employing mail and advance registration techniques. An organized system of regularly reviewing existing course offerings and eliminating those with limited student acceptance generally does not exist. Duplicate files of student records are currently maintained by student deans and individual colleges as well as by the registrar in some universities. Also, a few universities are experiencing unnecessary financial burdens by failing to charge a fee which reimburses them for processing graduate admissions requests.

Recommendations for improvement

Implementation of the following recommendations will establish improved registration and scheduling procedures now and also provide the structure and direction to attain improved space utilization as enrollments continue to increase.

1. *Require attainment of the space utilization standards formulated by the Ohio Board of Regents before constructing additional comparable classroom and teaching laboratory facilities.*

In 1968, the Board of Regents established a student station utilization goal of 64% for the state-supported institutions of higher education in Ohio. In 1969, they modified this goal to 50%. While 50% may not be the optimum level for uniform attainment, it is nevertheless a standard which should be uniformly observed and enforced throughout the system. As additional experience is gained in the attainment of this goal by the universities, further analysis may very well cause the Board of Regents to modify it.

The single space utilization index will serve as an invaluable guideline in achieving maximum utilization of existing instructional space, but good judgment must be exercised in considering valid exceptions. Obsolete space will still need to be replaced. Certain special situations (such as the use of closed-circuit television, large lecture rooms, or computer-aided programmed learning laboratories) may justify lower student station utilization because faculty requirements are greatly reduced and, therefore, total costs lowered. The important point is that a uniformly enforced space utilization standard requires that any exception be presented in a formal proposal with thorough documentation for approval or disapproval on its own merits. Exceptions are treated as such and not judged according to the general rule.

Currently, the assignable area available or already funded totals 13.5-million square feet in the 12 state-supported universities of Ohio. The capital plan submitted by the Board of Regents for the period 1969 through 1975 provides an additional 3.6-million square feet of assignable space and indicates an unfilled need for 2.3-million square feet. The expansion requested will require an estimated expenditure of $277-million. To meet the 1980 head count enrollment of 284,000 students as indicated in the Master Plan for the main campuses of state-supported universities at a reasonable cost, improved student station utilization is required. An achievement of a student station utilization of only 50% at all the universities would enable a student enrollment of over 262,000 to be accommodated by existing instructional space. An improvement in space utilization to this level could eliminate a need for approximately $40-million of the $725-million in capital investment deemed necessary by the Board of Regents to meet 1977 enrollments.

2. *Assign full responsibility and control of all instructional space to the university planning function.*

In order to achieve the space utilization goal set by the Board of Regents, each university must centrally control and schedule its instructional space. (Instructional space must be considered university space, not business school space, engineering school space, and the like.) Space utilization is closely tied to planning and therefore should be an integral part of that function.

To provide for adequate management control and further increase student station utilization, the responsibility for scheduling at the larger universities should be placed with a director reporting to the Vice President for Planning. At the smaller universities, this should be an assigned responsibility of a member of the planning organization. The various inputs of student enrollment, course section availability, classroom inventory, student station inventory, faculty availability and capability, and unique classroom requirements are best integrated under one person in the planning function. This will enable short- and long-term planning to be coordinated.

Current scheduling methods will prove inadequate as new facilities are completed, temporary classrooms are released, the Board of Regents develops more detailed and broader utilization standards, and the physical facility planning activity becomes more detailed. The scheduler should have the authority to assign class sections to the room and time period most appropriate to the optimum use of the physical plant. Also, instructors should be utilized on the basis of availability as needed any time during the hours of 8:00 a.m. to 5:00 p.m. It will be necessary to exercise more control over student course section and time selection if maximum use is to be made of facilities during the less desirable time periods. Implementation of this recommendation should provide each university with the essential structure for attaining greater utilization of instructional space.

3. *Expand the use of mail registration techniques and limit open registration to the processing of student schedule changes.*

Well-systematized mail registration practices lend themselves to the development of more precise controls and easing of paperwork processing. With the use of such procedures, registration can be extended over a longer period, and this allows the registrar additional time to process paperwork. In addition, closed courses and sections are evident earlier, and the colleges and department chairmen can adjust their course offerings and section schedules in an orderly fashion on the basis of better-known requirements. The clerical work load in the registrar's and the bursar's offices is reduced for better control of the data and elimination of errors. The requirement for extra part-time clerical workers in the registrar's office is reduced, and savings can be realized.

From the student's standpoint, the registration procedure is simplified, and the need for waiting in line for registration and payment of fees is minimized. Except for the processing of late registrants, activity during the open registration period should be limited to making required changes in students' programs and schedules. Students should be required to appear in person for this purpose.

Such registration systems now exist at the University of Akron, Ohio University, and Miami University and could be used as models for establishment of similar mail registration practices at other universities.

4. *Implement advance registration for upper-division and graduate students.*

Advance registration is a procedure under which upper-division and graduate students register for the winter and spring quarters when they enroll for the fall term. Upon starting his junior year, the student should have decided upon the degree which he hopes to obtain. Therefore, the student's advisor or counselor is in a position to recommend the required courses and the most rewarding or logical electives.

This procedure would provide each university with more complete advance data on requirements for faculty, classrooms, laboratories, courses, and sections. It would facilitate planning and reduce the work load of those involved during the registration period. The student gains the benefit of a settled program and the assurance he will be able to register for the courses required for graduation. Furthermore, if the student must work to pay for his education, he will be in a better position to plan his employment program.

Admittedly, this may increase the student's requirement for course or section changes. However, these can be processed in the normal manner during those time periods ordinarily designated for that purpose.

Such advance enrollment procedures are currently operative at the University of Akron and Miami University not only for upper-division and graduate students but also for all students. As a minimum, the advantages of this procedure should be obtained for upper-division students, who will require fewer class changes than underclassmen.

5. *Install a fully computerized pre-registration and scheduling system for students, course offerings, classrooms, and laboratories.*

Although some universities have automated the pre-registration system, none except Miami University has extended the use of the computer to the scheduling function. The expanded use of mail pre-registration procedures facilitates the use of computer techniques in registration and scheduling. As student enrollments continue to grow, it will become increasingly important to streamline the registration process and maximize efficiency in space utilization. The rapid recording and analysis of data, the prompt production of accurate reports, and the flexibility and time to adjust to changing patterns and conditions are all essential to attainment of these ends.

These requirements can be met through the combination of mail registration systems and computerized data processing. Paperwork practices in the admissions office must also be coordinated with procedures designed for classroom scheduling and student registration. This coordination should involve only minor changes in admissions records and not affect that function.

Computer scheduling has improved space utilization at a number of universities around the country. Three of the more successful systems are operative at the University of Colorado, Purdue University, and Washington State University. Such a scheduling system can be designed to honor a student's choice of class time whenever possible.

The design and programming of the needed registration and scheduling system should be assigned to the central administrative systems and procedures staff recommended in the Overall System Management section of this report. This is a common need and should not be satisfied by redundant efforts at each university. The systems installed at the University of Akron, Bowling Green State University, Miami University, and Ohio University can all be used as models.

The implementation of this recommendation will eliminate many clerical operations, provide the ability to meet the demands of growing student enrollment, and better serve the needs of those students. Annual state-wide savings of $250,000 are estimated.

6. *Add alternative use possibilities to the room and laboratory inventory.*

The space utilization statistics of all universities show lower utilization of laboratory space than classroom space. In order to utilize existing space most effectively, alternative uses of space should be developed. For example, when certain laboratories lend themselves to use as general classrooms, the space inventory should indicate a primary and secondary use of these facilities. Obviously, care must be taken to protect any scientific equipment located in the teaching area.

As enrollments continue to increase, the secondary use of classroom and laboratory space will better match class and room size, achieve a balanced utilization of all instructional space, and significantly improve student station utilization.

7. *Establish a system of regular review of poorly attended courses to consider their elimination from the curriculum.*

Certain courses and sections offered in the catalog have a very low level of student interest and acceptance. Their continued scheduling occupies classrooms and time periods which could serve more productive purposes. Therefore, courses experiencing limited attendance should be reviewed by the academic heads to determine whether they should be eliminated. Possibly their content and presentation should be changed to gain greater student acceptance.

At the close of each registration period, course attendance statistics should be developed. Registration records of preceding quarters for courses with consistently low student acceptance should be evaluated by the head of academic affairs in discussions with the college dean and department chairmen. By establishing such a system of review on a regular basis, courses and sections with limited acceptance can be replaced with ones better serving student needs. Not only will the student body profit, but also greater utilization of instructional space will be achieved.

8. *Eliminate duplicate filing systems for student information, and centralize maintenance and retention.*

Student information of various types is required throughout the year by almost every administrative and academic department at each university. To meet these recurrent needs, as many as three or four separate student information files are maintained by independent departments at many institutions.

- The admissions office maintains a personal information file on prospective and accepted applicants.
- The registrar collects a large volume of personal information at registration.
- Student data are entered into a manual or partially automated data base.
- Interested departments, colleges, and appropriate student deans receive information.
- The registrar maintains student academic records.
- Each college establishes a complete personal data file for each student enrolled.

As can be expected, retention and maintenance practices for each of these files are widely divergent. In some cases, microfilm with security prints are utilized; a few departments at Ohio University employ this practice. Most commonly, standard vertical files are used to store the information. A variety of data portrayal methods are used, and security copies are not always maintained. Neither consistent forms for recording data nor formal purging policies exist.

Each university must evaluate its total need for and use of student personnel data. An overall student information system policy should be developed by the management services function (recommended in the Systems and Data Processing section of this report). It should include retention programs, source document design, data access requirements, display formats, security copies, the use of microfilm, and related items. Such systems can eliminate the redundancy of existing files, provide a workable program for resolving future data problems, increase both the speed of access and accuracy of data, provide security, and improve service to students, faculty, and staff.

Such a system should utilize the computer to store, maintain, and display the major data requirements. The computer design and programming of student information should be accomplished by the central systems and procedures staff (recommended in the Overall System Management section of this report) so a common system can be used by all universities. The combination of manual procedures and policies developed at each university with a well-designed model student information computer system can reduce the personnel required for maintaining student files at each institution. Annual clerical cost savings of $125,000 are estimated.

9. *Establish a fee structure to offset the cost of processing graduate school admission applications.*

Several universities charge no fee or an insufficient fee to process applications for their graduate schools. A survey of the effort required to process these applications, including all necessary contact and coordination with other departments, indicates a $20 fee would closely approximate actual processing costs. The universities do charge adequate fees to cover undergraduate applications, so the same policy should be instituted for graduate school applicants. The implementation of a $20 fee for graduate school applicants will produce approximately $250,000 in additional annual income.

10. *Conduct a detailed study of the effect of faculty teaching loads, scheduling, and utilization on the use of instructional resources, and then establish university policies and standards.*

Although an appraisal of faculty loads and utilization was beyond the scope of our study, this subject could not be totally ignored. Faculty work loads and scheduling now appear to exert a limiting influence on increased student enrollment and improved student station utilization. These factors should be reviewed to establish university policies and standards on faculty utilization so the administration at each school can achieve a greater return on its substantial investment in physical facilities. Such a study should be directed toward establishing policies on such items as:

- Hours of instruction per faculty member
- Faculty teaching schedule restrictions
- Saturday and evening teaching assignments
- Minimum and maximum class size

Although one standard will not be feasible for each item, appropriate classifications will enable their complete specification.

Financial Management

IN THE 1967/68 school year, instructional and general operating expenditures at the state-assisted institutions of higher education in Ohio totaled $284.6-million. Other related costs amounted to $172.7-million. Additionally, $121.6-million was allotted for construction in progress. Total assets of these institutions have a book value of $1.18-billion. A financial profile of each university in the state system is presented in the table, "Income, Expenditures, and Total Assets of Ohio's Universities for Fiscal 1968," facing this page.

Annual expenditures and total institutional assets plus relatively short-term requests for additional investment ($1.4-billion) represent a package totaling $3-billion which must be administered by the combined financial management organizations. In another sense, this represents the physical and financial resources available in the state system of higher education. Responsibility for optimum use of this huge accumulation of material assets and the annual expenditure of more than $457-million for operations is divided among 12 separate and independent administrative organizations.

Appraisal of current operations

Financial management in the 12 universities in the Ohio system of higher education varies as to procedures employed and their effectiveness. In general, accounting procedures are alike because each institution, except Ohio State University, employs the uniform Chart of Accounts supplied by the Auditor of State. However, accounting controls in all institutions are in need of improvement. The Auditor of State also has assigned one or more Resident State Examiners to each university campus. The activities and responsibilities of these examiners are so limited, however, that they must be viewed as superficial in terms of monitoring overall operations.

In each institution, financial planning is limited to preparation of the annual operating budget. The extent

INCOME, EXPENDITURES, AND TOTAL ASSETS
OHIO'S UNIVERSITIES — FISCAL 1968
(Thousands of Dollars)

	AKRON	BOWLING GREEN	CENTRAL	CINCINNATI	CLEVELAND	KENT	MIAMI	OHIO STATE	OHIO	TOLEDO	WRIGHT	YOUNGSTOWN	TOTAL
Current Income													
Instruction and general:													
Governmental appropriations	$ 6,301	$ 8,969	$ 2,247	$10,624	$ 5,531	$15,660	$ 9,041	$54,322	$15,170	$ 6,254	$ 2,687	$ 5,698	$142,504
Student fees (and tuition)	5,402	7,166	1,127	16,108	3,877	12,503	8,091	22,043	12,613	5,851	2,136	6,040	102,957
Endowment income	41	—	—	1,212	—	—	10	1,631	43	5	—	—	2,942
Gifts and grants	263	147	281	4,473	510	547	149	18,201	1,087	165	0	43	25,866
Recovery of indirect expenses	135	1,236	—	1,003	27	106	28	—	305	176	—	—	3,016
Departmental sales and charges	21	246	—	479	—	307	79	—	65	32	0	—	1,229
Other	41	455	64	679	138	400	598	28,039	449	368	17	96	31,344
Total	$12,204	$18,219	$ 3,719	$34,578	$10,083	$29,523	$17,996	$124,236	$29,732	$12,851	$ 4,840	$11,877	$309,858
Organized research	$ 445	$ 314	$ 3	$ 8,250	$ 1	$ 554	$ 212	$ 9,519	$ 662	$ 376	$ 16	—	$ 20,352
Public service	577	799	144	16,438	33	1,019	220	23,801	3,889	613	38	$ 40	47,611
Auxiliary enterprises	2,790	12,026	1,659	5,964	914	10,251	7,864	27,489	9,675	2,630	206	1,451	82,919
Student aid	514	228	347	970	106	928	297	3,832	885	242	11	421	8,781
Miscellaneous income	—	—	—	—	—	—	—	—	—	—	—	—	—
Total Current Income	$16,530	$31,586	$ 5,872	$66,200	$11,137	$42,275	$26,589	$188,877	$44,843	$16,712	$ 5,111	$13,789	$469,521
Current Expenditures													
Instruction and general:													
Departmental instruction	$ 6,411	$10,045	$ 1,878	$20,852	$ 4,808	$18,489	$10,242	$69,826	$16,810	$ 8,384	$ 2,898	$ 5,156	$175,799
Instructional services	626	391	86	424	314	662	607	—	1,093	127	75	34	4,439
Libraries	536	916	211	1,048	778	1,859	943	3,246	1,191	573	451	331	12,083
Plant operation and maintenance	1,975	3,210	798	3,008	1,398	2,357	1,722	9,571	3,514	1,253	536	1,087	30,429
Student services	732	980	369	1,392	603	1,584	1,308	—	1,908	760	218	340	10,194
General expenses	1,169	843	228	1,943	374	1,214	687	3,122	1,901	735	276	242	12,734
General administration	1,069	1,298	375	1,255	990	755	730	3,971	1,111	582	439	466	13,041
Other	—	—	—	—	—	—	—	25,885	—	—	—	—	25,885
Total	$12,518	$17,683	$ 3,945	$29,922	$ 9,265	$26,920	$16,239	$115,621	$27,528	$12,414	$ 4,893	$ 7,656	$284,604
Organized research	$ 615	$ 408	$ 3	$ 8,818	$ 1	$ 641	$ 240	$10,359	$ 859	$ 384	$ 16	—	$22,344
Public service	829	965	144	15,738	48	1,332	294	30,388	4,153	682	52	$ 41	54,666
Auxiliary enterprises	2,931	11,292	1,740	6,226	1,048	11,690	8,666	27,153	9,941	2,463	174	1,256	84,580
Student aid	675	390	550	2,785	180	1,404	524	2,233	1,573	410	34	421	11,179
Total Current Expenditures	$17,568	$30,738	$ 6,382	$63,489	$10,542	$41,987	$25,963	$185,754	$44,054	$16,353	$ 5,169	$ 9,374	$457,373
Excess or (Deficit) of Current Income over Current Expenditures	($ 1,037)	$ 848	($ 510)	$ 2,711	$ 595	$ 288	$ 626	$ 3,123	$ 789	$ 359	($ 58)	$ 4,415	$ 12,149
Total Assets (after Elimination of Inter-fund Balances)	$45,841	$21,945	$23,629	$171,970	$61,695	$117,853	$120,710	$383,303	$139,524	$54,773	$17,342	$18,566	$1,177,151

to which universities effectively monitor the budget or use it as an operating control varies from not at all to fairly comprehensively. The cash flow statement, a basic tool of financial management, is not used at any of the institutions. It follows that no long-range financial planning activities exist at any of the universities. Investment programs are generally well administered. However, short-term investments cannot be programmed for maximum earnings without current and reliable cash flow data. In some universities, for example, temporarily surplus cash funds are not moved into the investment stream as promptly as they could be.

Administration of financial affairs in a complex of similar and associated institutions dictates the use of essentially uniform systems and procedures for general recordkeeping, payrolls, purchasing, operations reporting, and budgeting. Except for the Chart of Accounts supplied by the Auditor of State, however, there is no uniformity. At present, there are as many sets of procedures as there are institutions in the state system. Only Bowling Green State University has developed procedures to analyze operating costs in terms of functions and services at the departmental level. These procedures need refinement, but they represent a practice which should be employed by all universities on a uniform basis. The resulting data would supply the basis for determining operating ratios and standards for measuring performance.

In terms of scope and effectiveness, financial and operating controls at the various universities range from fairly good to extremely poor. For example, Miami University and Ohio State University have formal internal audit functions which regularly and effectively check sensitive areas and operations. Conversely, at another university, the books of account are out of balance, the Annual Financial Report contains obvious errors, and the records of student funds and student accounts receivable will require major audits to bring order out of chaos. Other institutions need but do not have formal internal audit functions.

Budgeting procedures at most institutions involve only a simple accumulation of departmental requests for an allotment of funds for a single school year. Only Ohio State University uses a program-planning-budgeting system to coordinate line-item budgets with a documented plan of operation keyed to utilization of physical and fiscal resources.

Recommendations for improvement

The rapid growth of the universities in the Ohio system of public higher education has created a situation under which administrators can do little more than formulate policies and procedures and review and interpret reports on operations. Many administrative duties which they performed when the institutions were smaller now have to be delegated to subordinates.

Consequently, a system of controls must be established by these administrators to ensure that the policies of the Board of Regents and the university boards of trustees are faithfully and effectively implemented. Similarly, they must ensure that their own procedures and directives are observed and that institutional resources are adequately protected, conserved, and employed to maximum advantage.

These responsibilities entail development of a management structure and procedures to ensure proper administration of delegated functions as well as timely and accurate presentation of control information. External regulations must be observed, and matters requiring consideration must be promptly presented.

The following recommendations are presented within the framework of these conditions and objectives.

1. Institute long-range financial planning.

Formal or documented financial planning, even short-term cash flow projection, is lacking at all Ohio universities. The multimillion-dollar financial packages represented by each of the universities cannot be administered at maximum effectiveness without both short-term and long-range financial planning.

Each university has prepared a document purported to be a capital plan for the 1971/73 and 1973/75 biennia. However, these simply represent requests for capital funds. They are uncoordinated and unsupported by operating or financial plans, nor are they related to the Ohio Master Plan. Concurrently, operating budgets for the 1969/71 biennium have been prepared by each university. These documents are conventional line-item budgets based upon student enrollment projections and historical expenditure patterns. In general, this is the full extent of institutional financial planning.

The one exception is Ohio State University, where a program-planning-budgeting system is being introduced. This program represents an essential element of financial planning—it documents the anticipated expenditure pattern. The need for a similar program in all universities and the benefits to be derived are addressed in a subsequent recommendation. Just as program-planning-budgeting is an element of long-range financial planning, the latter function imparts substance to comprehensive university planning.

Responsibility for financial planning should be assigned to the university's principal financial officer. In this role, he must evaluate student enrollment projections and anticipate the source, timing, and extent of the university's financial resources for a period of at least five years. These data must then be coordinated with the university's academic, research, public service, capital improvement, and other plans to determine financial requirements. When plans and resources do not complement each other or are not in balance, they must be altered or augmented. Thus, the university has adequate advance notice of financial problems and their timing. They are aware of the impact of new construction upon routine operating and maintenance costs and can plan accordingly. This is a vitally important calculation, particularly when the university is fortunate enough to have access to outside funds in the form of gifts, grants, or bequests which permit independent construction of new facilities. For example, a university could raise several million dollars from nonstate sources for campus improvements and new construction. However, there must also be documented calculations, projection, or planning with respect to the funds required to operate and maintain the new facilities when they have been completed.

2. Organize and reorient accounting departments so they become an effective arm of management.

Most university accounting departments limit their activities to the processing of routine daily transactions and the periodic issuance of standard accounting statements. They should be more concerned with gathering operating data for compilation into coordinated and useful reports. These data must be transmitted to administrators at timely intervals to assist them in making meaningful management decisions.

The controller should ensure that accounting reports aid the administrators and managers responsible for the multiplicity of university functions. Reports should include budget and financial data but should not be limited to these items. Operational data pertinent to each department and the university as a whole must also be provided. Furthermore, these data should enable an evaluation of performance where there is an appropriate basis or acceptable performance standard. If standards or goals have not been established, the accounting department should be instrumental in their identification and determination. Reports should tell the management organization all that it needs to know, when the need is present, and in easily understandable form.

Some progress has been made in this direction. Bowling Green State University has developed and is using a cost analysis report. It provides an excellent analysis of the elements which make up the total cost of operating a department, a building, or an entire institutional function. The cost analysis report presents a line-item, detailed tabulation of functional costs for each operating segment of the university. For example, detailed costs are given for each building or each department in a college. Such data are given for the current month and year to date. This type of report is distinguished from budget reports in two ways: first, no budget figures are given, and second, budgets are not departmentalized. In other words, there is a total report for each college or for operation of a total physical plant, rather than for each instructional department or building. At present, however, the cost analysis report needs refinement.

Ohio University has instituted a well-designed management reporting system based upon the concept of "responsibility accounting." Here a separate report is prepared for each level of supervision. Each first-level department or section supervisor receives a report for his area of responsibility. In turn, the manager of several operating departments receives a detailed summary report for his total area of responsibility plus individual reports for each section or department. This concept is repeated in each higher echelon of management. Thus, a vice president receives a consolidated summary report, several subsummaries, and a greater number of individual departmental reports. Such reports show actual revenue and expense including encumbrances and comparable budget data for the current month and year to date. They also include comparative data for the preceding year and, in each case, the percent of total budget expended for every line item.

Both the cost analysis report developed by Bowling Green State University and the "responsibility accounting" system used by Ohio University might serve as models for reporting procedures for state-wide use in institutions of higher education. The benefits which might be realized through this and the preceding recommendation are not readily quantified. However, conservatively, they are estimated to exceed 0.5% of total expenditures, or $2.3-million per year.

3. *Institute program-planning-budgeting systems.*

The program-planning-budgeting approach involves the evaluation, control, and allocation of all institutional resources—funds, personnel, and space. Resources are keyed to the basic purposes, goals, and objectives of the institution and related to its current status. This system does not replace the familiar line-item budget but imparts substance, meaning, and purpose to that budget. Although the line-item budget is prepared for an academic year or a legislative biennium, program budgets must display the impact of a project upon total institutional resources for a longer period of time. At Ohio State University, where the program-planning-budgeting system has been introduced, program projections are made for a period of six years.

The Ohio State University program is recommended for use at all institutions in the state system. The approach is well advanced, and the great volume of research which is necessary to develop such a system is virtually completed. An introductory and descriptive brochure has been compiled, and the various working forms incidental to utilization of the program-planning-budgeting system have been designed and printed. Furthermore, the computer programs required to make the system operational have been developed and tested. The system is described, in part, in the Ohio State University brochure in the following terms:

> "In the primary academic services, we operate under six-year academic plans. Basically, the plans include two closely united segments. The first, mostly narrative, states the general objectives and current status of the department including such things as:
>
> 1. The philosophy of the department
> 2. The image of the department
> 3. Six-year goals for changing the department on a program-by-program basis
> 4. Departmental plans for securing outside support from private business and governmental sources
> 5. Priorities for each of the programs
>
> "The second segment, mostly quantitative, translates each of the programs into a general six-year forecast of anticipated incremental changes in staff, space, and financial needs and in terms of expected changes in students and outside resources. This forecast also includes the anticipated requirements for student and learning services support. These plans incorporate all the goals of the department and can be updated at any time, although an annual review is required as a minimum."

The term "student and learning services support" used in the description above is defined and graphically illustrated by the chart of the university environment facing this page. The university environment is represented as an interrelationship of the primary academic services of the institution with academic environment support services and general support services. Ohio State University's program-planning-budgeting system ensures that each service which makes up the university environment is appropriately integrated.

Thus, since the requisite plans and procedures are available, state-wide use is a matter of inter-institutional communications. The benefits to be derived are obvious. They represent the difference between a carefully planned and an essentially haphazard utilization of resources totaling more than $1-billion. Even a 1% improvement would be worth $10-million annually.

4. *Utilize cost standards in the compilation, review, and evaluation of budget requests.*

In too many state institutions of higher education, budgeting is little more than an annual accounting exercise. The overriding criterion for budget development appears to be what can be afforded rather than an analysis of requirements.

Many tools can aid in establishing standards and budgets. One of the most useful is to have each operation establish its own standards and budgets, subject to approval and acceptance at the policy level. This is based on the philosophy that functional administrators are best qualified to understand objectives, facilities, and the human element of their respective operations. Permitting individuality in establishment of standards and budgets invites realism and a better portrayal of planned results. This contributes to more effective actual accomplishment and establishes a concerned interest on the part of management personnel.

Conversely, published and proven cost standards are available for such functions as custodial care, building maintenance, clerical duties, food preparation and service, warehouse storage, and materials handling. In addition, they cover a variety of other areas which contribute to university operating costs.

These data may be used in the preparation and review of budget requests and in subsequent evaluations of performance against budget. Variations from budget should be explained by reference to unusual or unforeseen situations or by recognition of substandard supervision or employee performance. Thus, the need for remedial action is identified, and proper steps to improve the situation can be initiated.

5. *Institute meaningful budget performance reviews on a monthly basis.*

In most institutions, the budget review at each level of management during the preparation cycle appears to be fairly comprehensive. However, decisions are frequently based upon an estimate of anticipated revenue rather than an objective evaluation of demonstrated need. The primary yardsticks are expenditures in the preceding year and estimated increases for the year under study. There is evidence of the basic assumption that operations in preceding years were normal, efficient, and economical, but this may not necessarily be the case. Thus, this procedure has an inadvertent tendency to perpetuate poor administrative performance. In the "fund management" situation, poor administration is too often rewarded by receiving a larger proportionate share of available funds than the efficient manager or department chairman. Budget management and control are focused on the total departmental budget rather than its elements.

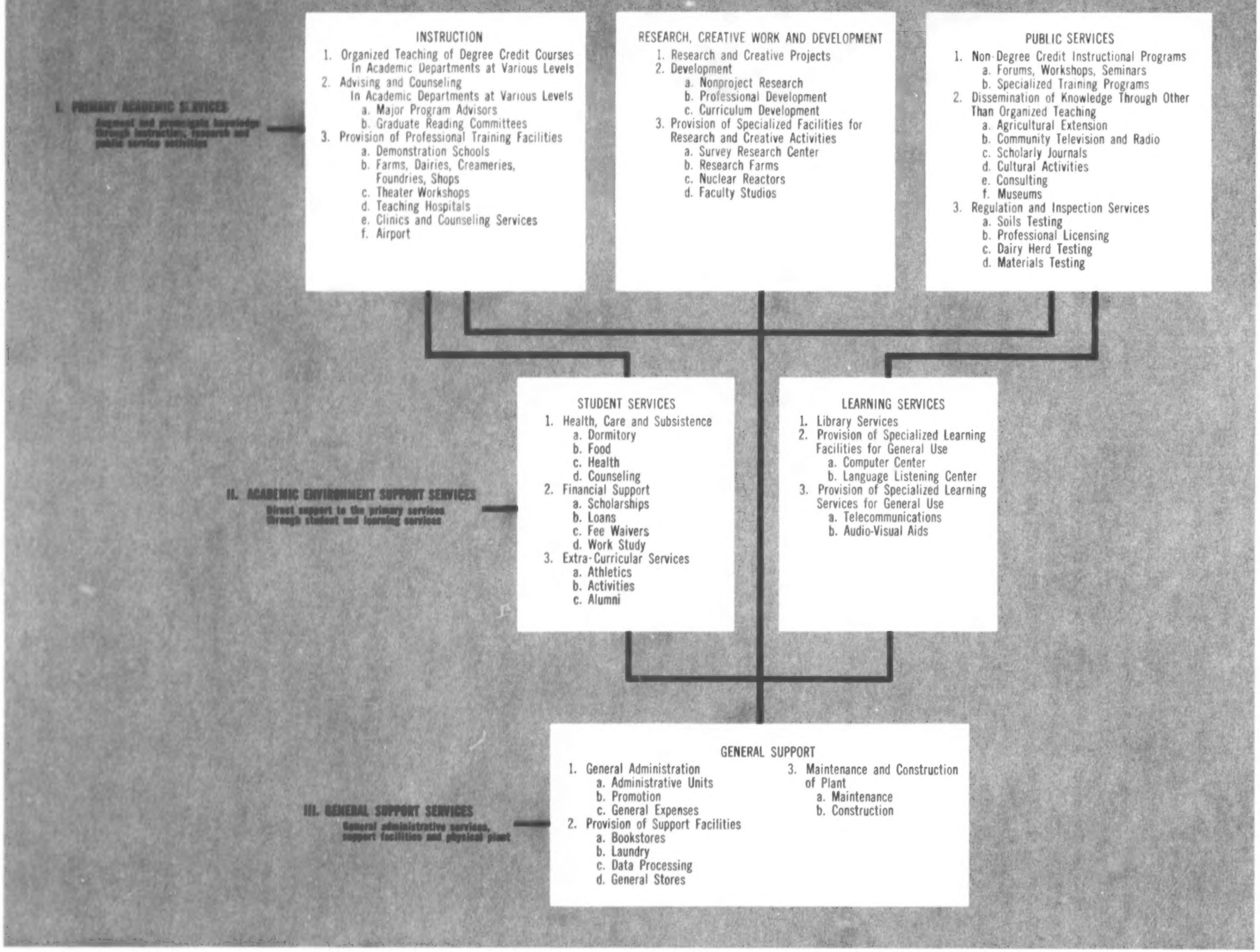
Effective control requires that budget review procedures for controllable expense items be instituted on a monthly basis. Incidental to this review should be a formal procedure for authorizing the shifting of allocated funds from one category to another.

In instituting budget review procedures, it should be recognized that expenditures fall naturally into certain categories important from a control and review standpoint. Expenses are either fixed or variable, controllable or uncontrollable. In the academic areas, for example, professional salaries are the largest single item of expense and are essentially fixed. Hence, a review of staffing plans when the budget request is approved and subsequent approval of all payroll changes will provide effective and adequate control. The same is true in most administrative areas and in many service functions. Since employee benefits are generally keyed to payroll, these costs can also be monitored through control of the payroll.

A carefully designed and well-organized review procedure will reduce the necessity for devoting time to fixed and uncontrollable cost elements. Reporting techniques can be structured to omit such items. In turn, this appreciably reduces paperwork volume and limits reports to items for which review and consequent remedial action may be necessary and rewarding.

6. *Institute an internal audit function.*

Only Ohio State University and Miami University have organized internal audit functions. Several other institutions have essentially token audit operations.



The University Environment

I. PRIMARY ACADEMIC SERVICES
Augment and promulgate knowledge through instruction, research and public service activities

INSTRUCTION
1. Organized Teaching of Degree Credit Courses In Academic Departments at Various Levels
2. Advising and Counseling In Academic Departments at Various Levels
   a. Major Program Advisors
   b. Graduate Reading Committees
3. Provision of Professional Training Facilities
   a. Demonstration Schools
   b. Farms, Dairies, Creameries, Foundries, Shops
   c. Theater Workshops
   d. Teaching Hospitals
   e. Clinics and Counseling Services
   f. Airport

RESEARCH, CREATIVE WORK AND DEVELOPMENT
1. Research and Creative Projects
2. Development
   a. Nonproject Research
   b. Professional Development
   c. Curriculum Development
3. Provision of Specialized Facilities for Research and Creative Activities
   a. Survey Research Center
   b. Research Farms
   c. Nuclear Reactors
   d. Faculty Studios

PUBLIC SERVICES
1. Non-Degree Credit Instructional Programs
   a. Forums, Workshops, Seminars
   b. Specialized Training Programs
2. Dissemination of Knowledge Through Other Than Organized Teaching
   a. Agricultural Extension
   b. Community Television and Radio
   c. Scholarly Journals
   d. Cultural Activities
   e. Consulting
   f. Museums
3. Regulation and Inspection Services
   a. Soils Testing
   b. Professional Licensing
   c. Dairy Herd Testing
   d. Materials Testing

II. ACADEMIC ENVIRONMENT SUPPORT SERVICES
Direct support to the primary services through student and learning services

STUDENT SERVICES
1. Health, Care and Subsistence
   a. Dormitory
   b. Food
   c. Health
   d. Counseling
2. Financial Support
   a. Scholarships
   b. Loans
   c. Fee Waivers
   d. Work Study
3. Extra-Curricular Services
   a. Athletics
   b. Activities
   c. Alumni

LEARNING SERVICES
1. Library Services
2. Provision of Specialized Learning Facilities for General Use
   a. Computer Center
   b. Language Listening Center
3. Provision of Specialized Learning Services for General Use
   a. Telecommunications
   b. Audio-Visual Aids

III. GENERAL SUPPORT SERVICES
General administrative services, support facilities and physical plant

GENERAL SUPPORT
1. General Administration
   a. Administrative Units
   b. Promotion
   c. General Expenses
2. Provision of Support Facilities
   a. Bookstores
   b. Laundry
   c. Data Processing
   d. General Stores
3. Maintenance and Construction of Plant
   a. Maintenance
   b. Construction

These are a beginning, but they are inadequate to meet management needs. Additionally, the Auditor of State has assigned Resident State Examiners to each major campus on a full-time basis. However, the role of the examiners, from a management viewpoint, is superficial and usually confined to a perfunctory audit of routine disbursements. This activity meets the state's statutory requirements but does not fulfill current operating and management needs. The examiners' annual report on institutional operations is usually stereotyped and uninformative and rarely issued on a timely basis. For example, more than eight months after the close of fiscal 1968, annual audit reports had not been issued at Ohio State University and Miami University.

An organized and properly programmed internal audit function should be initiated at each institution in the state system of higher education. The internal audit function should determine that:

- Records reflect actual operations, results, and fund management accurately and promptly.
- Established controls are adequate and efficiently maintained for the full protection of the institution, its management, and employees.
- Each department or other organizational unit is carrying out the plans, policies, and procedures for which it is responsible.

To the fullest extent possible, the internal audit program should be coordinated with that of the Resident State Examiners to minimize overlap and duplication. Also, such a program allows for concentration in areas which will best serve the management control program.

The management control program and the internal audit activities should include but not be limited to the following:

- A payroll audit, involving an unannounced distribution of payroll checks, would prove that payrolls include only actual employees and that such employees perform the functions for which they are being compensated.
- A purchasing procedures audit would ensure proper use of bidding techniques and state-wide commodity contracts.
- An audit of student dormitories and dining halls would show whether charges had been properly billed and covering funds collected.
- An audit of the food service operation would verify that: food purchases are properly made; inventories are accurate, adequately controlled, and properly priced; food and supplies usage is consistent with the student population being served; and there is no evidence of significant pilferage.
- An audit of bookstore and airport operations would ensure proper maintenance of acceptable controls of cash, purchases, inventories, and invoicing.
- Special audits or investigations could be conducted in any areas where operating or budget reports might indicate attention is warranted.

An audit program developed along these lines must necessarily produce tighter operations and economies. Annual savings equivalent to 0.5% of operating expenditures would amount to $2.3-million. This represents an extremely conservative estimate.

Systems and Data Processing

THE USE OF COMPUTERS to meet the data processing and management information requirements of state-supported universities in Ohio is growing rapidly. Some universities are taking the initial steps necessary to develop comprehensive management information systems. However, most are still implementing basic systems to meet the day-to-day needs of the major administrative departments. This rapid growth in computer usage is further compounded by the simultaneous demand for academic and teaching applications. There are three distinct areas requiring computer support in Ohio's colleges and universities—administrative, instructional, and research.

The typical development of systems and data processing capability at Ohio's universities followed a set pattern. The initial applications of data processing were generally in the registrar's offices—maintaining enrollment records, compiling class lists, and issuing grade reports. This often was accomplished by contracting with a service bureau to process the keypunched information and print the necessary reports and lists. As enrollments increased and greater familiarity was gained with data processing, punched card equipment and subsequently small second-generation computers were installed for administrative needs. About the same time, most universities also installed a small scientific computer for instructional and research purposes. These two modest facilities were operated and controlled separately by academic and administrative departments.

With the advent of the more powerful third-generation computers, the medium-sized schools have begun to consolidate academic and administrative operations into one computer processor. This has eliminated at least one of the small second-generation computers at these schools. The larger universities are operating several computers, each of which is used separately for administrative or academic needs.

This evolutionary process in the use of computers has resulted in a myriad of reporting and organizational relationships for computer facilities. At universities with only one computer facility, this activity reports either to an academic or administrative head. At those with more than one computer facility, each is under administrative or academic jurisdiction.

Systems and data processing activities at the state-supported universities and colleges in Ohio employ a total of 552 people and utilize 28 computer processors. These activities expended an approximate total of $8.95-million in fiscal 1968. Computer and punched card equipment rental amounted to $4.26-million, or 48% of the total budget. Expenditures to support this function are expected to increase rapidly at every university. As greater use of this technology is achieved by faculty and students, greater instructional and research demands will be made.

The variety of computer hardware installed at the universities ranges from second-generation processors such as the IBM 1620, IBM 1401, IBM 7094, Honeywell 200, and Burroughs 5500 to third-generation models such as the IBM 360/40, IBM 360/44, IBM 360/50, IBM 360/75, IBM 1130, and NCR Century 100. The table above right presents detailed data on the computer facilities at each state university.

Time-sharing systems with many remote consoles are not used to any significant degree for instructional purposes. Substantial increases in computer power will be necessary to support well-developed computer-assisted courses. For example, experience has indicated that two numerical analysis courses with an enrollment of about 700 students can consume roughly six hours a day, five days a week for homework utilizing an IBM 360/50.

Ohio universities have completed or are in the process of developing automated systems to process routine transactions, such as accounts and budgets, payroll, receiving and disbursing, student registration, cumulative records, grade reporting, alumni and student mailings, and scheduling. However, each school has independently developed the systems and computer programs for these activities.

UNIVERSITY COMPUTER FACILITIES — 1968/69

UNIVERSITY	CENTRAL PROCESSOR	MEMORY	EQUIPMENT RENTAL	OPERATING BUDGET	STAFF
Akron	IBM 360/44 IBM 360/25	256K 24K	$368,000	$720,000	33
Bowling Green	IBM 360/40 IBM 1620	256K	$220,000	$540,000	30
Central	IBM 1130		$30,000	$ 92,000	8
Cincinnati	IBM 360/50	512K	$316,000	$894,000	92
Cleveland	IBM 360/40	256K	$150,000	$276,000	24
Kent	Honeywell 200 Honeywell 200 Burroughs 5500	24K 48K 16K	$276,000	$410,000	29
Miami	IBM 360/40 IBM 1401 IBM 1620	256K 16K 40K	$286,000	$404,000	29
Ohio State	IBM 360/50 IBM 360/50 IBM 360/40 IBM 360/75 IBM 1130 IBM 1620 IBM 7094	256K 128K 256K 256K 32K	$1,834,000	$3,736,000	204
Ohio	IBM 360/40 IBM 360/44 IBM 360/20	128K 256K	$448,000	$1,077,000	68
Toledo	IBM 1401 IBM 1620	16K	$ 97,000	$227,000	11
Wright	NCR 100 IBM 1130	16K	$ 85,000	$252,000	10
Youngstown	IBM 360/40	128K	$152,000	$324,000	14
Total			$4,262,000	$8,952,000	552

Appraisal of current operations

A major failure of the institutions of higher education in Ohio is the lack of communication or exchange of technical knowledge of systems and data processing in administrative applications. The methods and procedures used by each university to meet its managerial needs are quite similar. Also, with the exception of Wright State University, Central State University, and Kent State University, the computer systems used by the universities are compatible IBM 360 models. Programs have been implemented for budget reporting, purchase order processing, menu planning, food costs, housing, maintenance, and other administrative areas. However, the degree of proficiency and success of these programs varies widely from university to university. As a result, there is a great duplication of effort and cost, in addition to the delay of other important programs which have significant benefits.

The continued maintenance of several computer facilities and their attendant technical staffs at a university is uneconomical and inefficient. Retention of two small, separate computers in the smaller universities to service academic and administrative needs is also uneconomical and unnecessary, since a third-generation processor with the computational ability to service both needs is available.

A comprehensive data base for the management purposes of planning, modeling, simulation, institutional research, and decision-making does not exist, nor have documented plans to achieve this capability been developed at any university. Although there is general recognition of this need, the lack of detailed plans hinders development of such a data base.

An important element missing in both the administrative and academic utilization of computers is long-range planning. At present, only verbal descriptions of future plans for administrative and management programs are related. Even less attention is devoted to future instructional and research programs. All universities are lacking organized and documented plans for developing the systems and data processing function. Such plans should detail appropriate time schedules, costs, benefits, manpower, and equipment requirements.

The presidents of the universities evince little familiarity with the full potential of computer technology to serve both the academic and management needs of the institution. This powerful tool has not been used to enhance the management control and planning capabilities of the administration, nor are the educationally significant computer resources being allocated with optimum efficiency. In the instructional and research areas, computer utilization is only in the early developmental stage. Thus, the contributions which computer technology could make to an academic resources center are not being realized.

Although both administrative and academic departments use computer operations, seldom are there systems for charging the actual time and effort devoted to projects. The assignment of project priorities and a continuing system of regular review with both academic and administrative heads is needed. A significant ingredient in the establishment and reassignment of priorities is accurate cost and benefit data.

The needed improvements in manual systems and procedures of reporting, recordkeeping, and management control are not being met by existing systems personnel. The universities, as a whole, lack an organized forms control activity. Poorly designed budgetary and operating reports require recasting for managerial analysis, and duplicate recordkeeping exists because of faulty systems of communication and information retrieval. Formal policy and procedure manuals are lacking throughout the administrative departments.

Recommendations for improvement

The systems and data processing function can play a significant role in assisting Ohio universities allocate the resources necessary for effective learning and scholarship. The computer can benefit both the academic and management groups. The following recommendations are applicable to all universities and are intended to assist them in properly directing, controlling, and utilizing this significant resource.

1. Develop uniform administrative systems and procedures to satisfy needs common to all state-supported institutions of higher learning.

Each university has the same administrative requirements regarding management reports, data accumulation, and information processing. The more important common needs are:

- Budget preparation and administration
- Student data systems
- Student registration
- Admission procedures
- Curriculum, student, faculty, and facility scheduling
- Library acquisitions, cataloging, and circulation control
- Management reporting systems
- Inventory control
- Purchasing procedures
- Personnel records and payrolls

Currently, 12 universities are developing their own version of the same basic procedures in each of these areas. As a result, the state complex of universities is developing 12 different systems for solving the same problems. Some universities have developed or installed well-conceived systems to satisfy an individual application. Others are still struggling to properly define the same application and initiate programming. In most cases, the applications in use require further systems and programming refinements for optimum results. In addition, some universities have a well-organized systems and programming capability, while others do not.

A common systems and programming effort conducted by a central staff would eliminate the present duplication of effort and needless expense. Not only would costs be reduced, but also the most effective system would be installed uniformly at each university. The best planned or installed administrative applications and the universities which have developed them are listed on the next page. The applications listed should serve as model systems.

MODEL COMPUTER SYSTEMS

Program-planning-budgeting	Ohio State University
Purchasing and encumbrance control	Ohio State University
Operating budget reporting	Miami University
Student data system	Miami University
Management reporting	Ohio University
Management information system	Ohio University
Student registration	University of Akron
Operating cost analysis	Bowling Green State University
Personnel records	University of Cincinnati
Institutional research	University of Toledo
Patient accounting, hospital management reporting	Ohio State University Hospital
Menu planning, food management	Ohio State University Hospital

The development of uniform administrative systems will not restrict the individuality of the universities. Rather, it will enable university administrators to manage their resources most effectively. Administrative officers can better control their activities with well-designed operating reports and timely, concise, and accurate management reports. A by-product of uniform administrative systems for state-wide adoption will be the generation of machine-processable data for use in preparing Board of Regents reports. Individual universities will be relieved of the clerical efforts now required, and uniform reporting will be assured.

Benefits (including savings of \$2.6-million) which would be realized through the implementation of uniform systems and procedures would be similar to those described in the Overall System Management section.

2. *Establish regional computer centers to accommodate the instructional, research, and administrative needs of all state institutions of higher education.*

The demand for computer time is growing at every university. A conservative estimate indicates systems and data processing expenditures will double in the next four to five years, even in the absence of firm plans to expand the instructional use of computers.

Although administrative programs are fixed in terms of logical applications, the volume of data will increase with student enrollment. Instructional and research uses of the computer are in their infancy, but the balance between administrative and academic usage will shift heavily towards the academic side. As the academic use of computers increases, so will the demands for interactive computer learning systems. Vast amounts of time-shared computer processing will be required to support such learning systems, but costs for these facilities at each university would be prohibitive.

Therefore, regional computer centers should be established to enable Ohio's colleges and universities to utilize more powerful computer resources at less cost. Regional centers will not eliminate the academic programming and consulting staff requirements at each university. However, they would eliminate the software programming and operations staffs at each school.

The regional computer center concept allows each university to tailor its computer time to the funds available. It also relieves each school of the overwhelming task of administering and developing a large-scale computer facility. Students at each institution would have the opportunity to utilize the most sophisticated software systems and interactive terminal devices. The benefits of regional computer centers have been recognized in northern Ohio where the University of Toledo, Bowling Green State University, the Medical College of Toledo, and Penta County Technical Institute are discussing a computer consortium.

The benefits of this recommendation are similar to those previously discussed in the Overall System Management section of this report.

3. *Consolidate computer operations into one facility under central management.*

The practice of maintaining separate computer centers for instruction, research, and administration has sidestepped the problem of effectively administering the systems and data processing function to meet the total needs of each university. The continued operation of separate computer facilities under independent administrations represents a costly and redundant solution to the problem. This condition creates artificial barriers between each facility and hinders the healthy growth of overall university computer usage.

Prior to the development of third-generation computer equipment, the technical state-of-the-art supported the operation of separate computer facilities to meet academic and administrative needs. However, the computational power of existing computer processors considerably negates that justification.

The merit of operating one computer facility to serve all university needs has been recognized at Miami University, Bowling Green State University, Youngstown State University, Cleveland State University, Central State University, and the University of Cincinnati.

Consolidation is in various stages of implementation at each of these universities. Ohio State University is also giving serious consideration to combining its three separate computer facilities. Even though these universities are initiating or contemplating physical consolidation of their computer facilities, they have not fully resolved the organizational problem of central administration. The table below, which shows present computer facility reporting relationships, illustrates the lack of centralized management for multiple installations and shows no uniform pattern for single operations.

COMPUTER FACILITY REPORTING RELATIONSHIPS

UNIVERSITY	ACADEMIC OFFICER	BUSINESS AFFAIRS OFFICER	PRESIDENT	OTHER*
Akron		1		
Bowling Green			1	
Central		1		
Cincinnati				1
Cleveland	1			
Kent (three facilities)	1	1		1
Miami (two facilities)	1	1		
Ohio State (three facilities)	1			2
Ohio (two facilities)	1	1		
Toledo		1		1
Wright (two facilities)	1	1		
Youngstown	1			

* Computer facilities report to a committee of academic and administrative officers, a hospital administrator, or research heads.

Data processing costs are very high, and they should not be increased because of inefficient management. The construction of multiple facilities at a university—with the special requirements of raised flooring, air conditioning, humidity control, electricity, tape and disc storage equipment, punched-card-handling equipment, forms carts, and forms supply room—is an unnecessary and redundant expense. A single computer facility at each university would eliminate this expense.

Further, there is the added cost of staffing separate facilities with individual operating personnel. Each facility requires a director, a software programming staff, a user liaison group, a data control section, and a machine operations group. A consolidated facility requires only one set of such technically skilled personnel, who are difficult to employ and retain. One facility can not only reduce the total number of such people but also elevate the importance of each support group. As a result, more attractive salary levels can be established, and the ability of the university to effectively compete with government and industry is increased. Moreover, through the employment of the most competent computer management personnel, more effective use of available computers can be achieved.

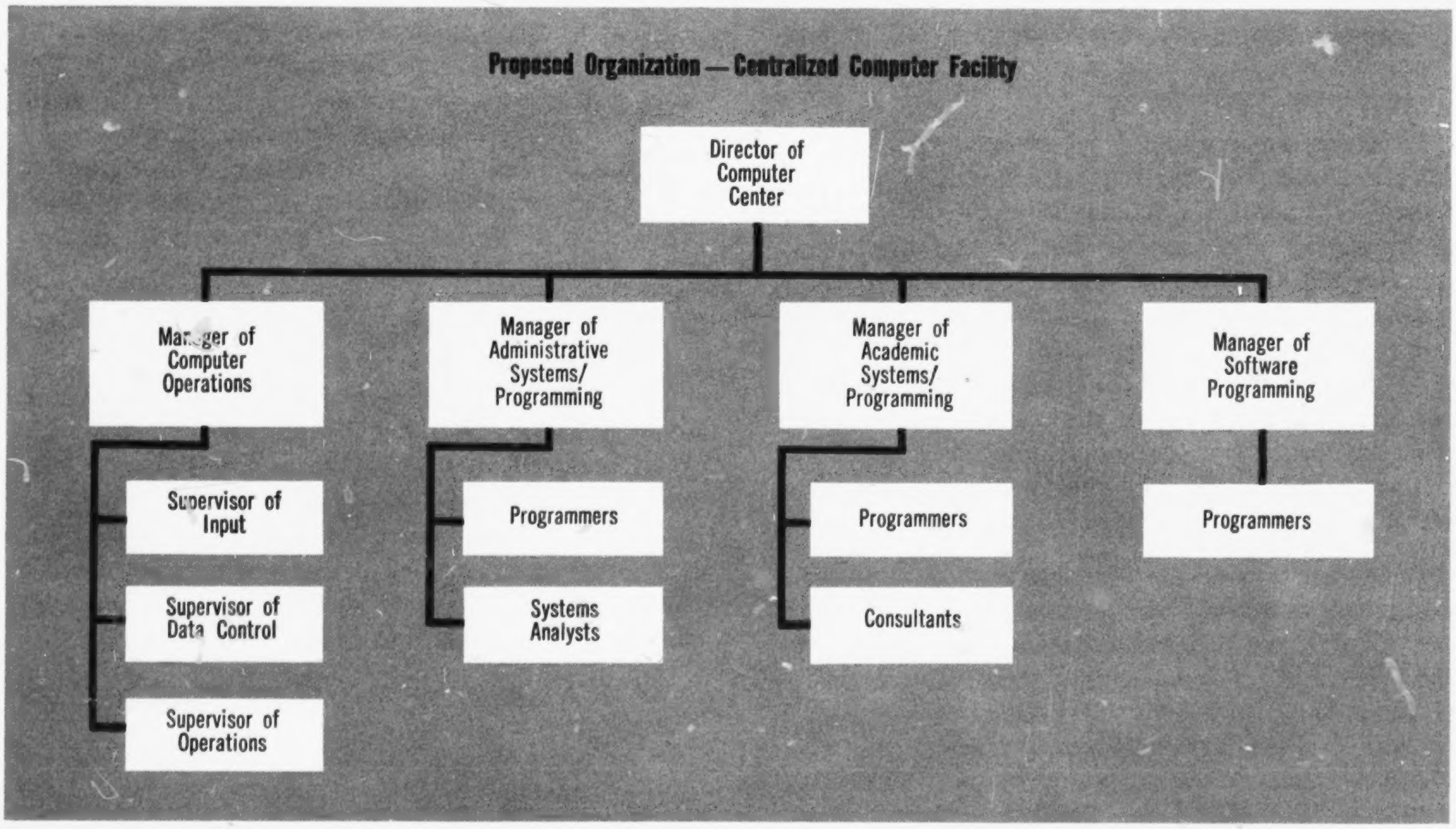
The operation of a single computer facility also evidences the economies of utilizing one computer processor to serve more than one need of the university. To attain the most productive use of third-generation computers, a multiprogrammed environment under the control of an operating system must be achieved. The use of several small computers inhibits this since the hardware capability of each is inadequate for this environment. By replacing these smaller processors with one larger processor, both academic and administrative needs can often be met. An on-line capability for both needs can be present together with background processing of administrative report requirements. Initial steps in this direction have been taken by Miami University, the University of Cincinnati, Cleveland State University, Youngstown State University, and Bowling Green State University.

The establishment of only one computer facility can achieve substantial economies and also increase productivity. Administrative overhead can be kept to a minimum, and more highly skilled technicians can be employed. The chart facing this page portrays the suggested functional organization of a centralized computer facility. Such a facility—with its operational economies of a single physical location, one administrative group, combined operations personnel, and one tape/disc librarian function, coupled with the ability to reduce the computer processors required—can conservatively achieve annual savings of $150,000.

4. *Compile a long-range plan for the development of computer operations incorporating objectives, programs, costs, and benefits.*

No institution in the Ohio system of public higher education has prepared a detailed plan for the long-range development of computer operations. The lack of such a plan implies that administrators are not in full control of all educational resources. The cost of operating computer facilities is already significant and can be expected to increase markedly over the next few years. Unless this expansion is guided by a detailed plan, valuable manpower and equipment resources will be wasted in attaining goals of secondary and even contradictory purposes. Since the average life of a computer historically has been three to four years and the time between order and delivery is normally one to two years, a detailed long-range plan must cover a minimum time span of five years.

The detailed plan developed for the next five years should be coupled with a less detailed but specific plan for the following five years. Both academic and administrative needs must be considered. Specific objectives, policy guidelines, and systems and applications to be developed must be stated. A timetable of achievement



Proposed Organization — Centralized Computer Facility

Director of Computer Center
Manager of Computer Operations
Manager of Administrative Systems/ Programming
Manager of Academic Systems/ Programming
Manager of Software Programming
Supervisor of Input
Supervisor of Data Control
Supervisor of Operations
Programmers
Systems Analysts
Programmers
Consultants
Programmers

with frequent checkpoints must be prepared, and the anticipated costs of equipment and manpower must be compared with the expected benefits. Since this plan affects the entire university, it should be developed in concert with the head of academic affairs and the chief fiscal officer. It should also receive the detailed review and approval of the president of the university.

A formal plan is essential to direct the efforts of this expensive facility and its virtually untapped potential. No attempt is made here to estimate the monetary savings which can be realized by developing this plan, but they can be considerable.

5. Develop a comprehensive management information and planning system.

The value of the computer in attaining comprehensive guidance and control of university operations is not being realized. The initiative for developing a broadly structured management information and planning system must emanate from the chief fiscal officer and the president of the university.

Comprehensive data bases do not currently exist, although efforts to build them are under way at Bowling Green State University, Miami University, and Ohio State University. However, the presence of a well-developed data base and the availability of a sophisticated computer facility do not ensure that they will be used for managerial purposes. Specific attention must be directed towards developing programs which allow the manager to use this information to simulate his operation, plan future development, build models, conduct institutional research, and make decisions. The management information system should answer such questions as:

- What will be the impact of a new 300-room residence hall on other facets of the university?
- How will a $100-per-year raise in tuition fees affect the net income of the university?
- What will be the effect of an increase in enrollment of 700 students?

In addition to assisting the top administrative officers in planning future action, a comprehensive information system monitors the current operation to trigger exception reports and display situations not functioning according to plan. Exception reports on excessive expenditures, reduced income, or uninvested cash can quickly alert the president and his staff to conditions requiring their attention.

Such a system can generate considerable savings. An estimated annual savings of 1% of current expenditures for general administration seems very conservative. Such savings would total $130,000 annually.

6. *Develop a computer orientation program for university presidents, chief fiscal administrators, and academic affairs officers.*

University management's lack of familiarity with the full potential of computers to serve both academic and management needs is a deterrent to optimum utilization of this facility. To establish effective long-range plans and develop the necessary management information systems, these university officers must know what the computer can and cannot provide. They do not have to fully understand the inner workings of the computer, but they must appreciate the systems-programming discipline necessary to develop integrated computer systems. The potential of computer-assisted instruction and information retrieval should also be explored.

A number of ways are available to develop such an orientation program. The computer center director, working with knowledgeable individuals on campus and with the computer manufacturer, could develop such a program for his university. An outside consultant could be utilized to conduct orientation at each university. The most practical method would be on a regional or state-wide basis with some outside assistance.

The increased awareness of the computer's capability to serve university needs by top university officials can dramatically hasten the attainment of comprehensive management systems and accelerate the instructional use of this facility. With better knowledge, the university president can be more effective in directing computer center efforts to attain prime objectives.

7. *Establish a procedure of systems priorities review.*

Until the major computer systems applications have been completed at each university, the head of the computer facility should prepare a monthly report indicating the status of all current and future projects under development and their priorities. Data in the report should be appropriately keyed to the long-range plan to ensure they do not conflict.

This report would be submitted to the university president for routine review in a cabinet meeting. It would keep the top officials of the university regularly informed on the status of this vital function. Another important purpose would be to change the priorities established for given projects. No matter how well-considered initial plans and priorities are, the dynamic environment of the university dictates that they be continually appraised.

A practical system for establishing and reviewing priorities is in operation at Bowling Green State University. During a weekly meeting of the President and the vice presidents, requests for new computer applications and existing assignments are considered. These reviews appropriately weigh the newly expressed needs against the needs of the university as a whole before existing priorities are adjusted. All the state-supported institutions of higher learning require a similar method for reviewing systems priorities.

8. *Develop a system of charging user departments with all appropriate costs for computer services.*

The computer facility represents a significant cost at each university. To ensure that appropriate use is made of these resources, a cost basis must be established for evaluating the benefits of proposed and present projects and for establishing proper priorities. Students, faculty, university administrators, and researchers are making increasing demands upon computer facilities, and this trend will accelerate.

Valuable computer time can be wasted on many trivial activities if adequate controls do not exist. Arbitrary limitations on program run time are not adequate and can preclude some important uses of the computer. Careful records of computer usage can be maintained by assigning job numbers and charging computer time against jobs. Cumulative records should then be maintained for each user department and project.

A relatively simple cost-charging system based on standard machine rates should be developed. These rates should include overhead and consider the budgeted utilization level for that machine. Then user departments must budget their planned usage of the computer facility, and the allocation of available computer power is based upon budgeted usage. The difference between standard rate charges and the actual expenses incurred by the computer operation also provide university administrators with some measure of performance of this facility. Another benefit is that the computer center director is encouraged to solicit academic and administrative usage to maintain the economical level of machine utilization for which he is budgeted.

9. *Establish the position of Director of Management Services reporting to the chief fiscal officer.*

Proper conduct of university affairs necessitates recognition and response to the need for management change. The whole manner of management—organizational structure, facilities, equipment, systems and procedures, and forms control — must be continually appraised and improved if the institution is to maintain a healthy management position.

The duties of the proposed position would be to establish a forms control program, conduct methods and procedures reviews, assist in establishing uniform policy and procedure manuals, conduct office layout and work flow studies, establish equitable work standards, and develop improved financial control systems and economical new methods.

Another very important function of this position would be to define the needs of new administrative and management computer-based systems and coordinate their development with the central administrative systems and procedures staff recommended earlier. The management services function would evaluate existing systems and procedures, define the information needs of the departments, and review these requirements with the central administrative systems and procedures staff. After agreement has been reached on the objectives of the model computer system to be developed, the detailed systems design and computer programming can be done centrally. Under the direction of the chief fiscal officer, the Director of Management Services would ensure that all administrative and management systems developed are compatible with the comprehensive management information system.

Since the universities have neither completed nor defined all the basic administrative application areas such as menu planning, food cost and university control, budget reporting, student registration, operating statements for auxiliary enterprises, to mention but a few, there is much to be coordinated. In the smaller universities, this function may not require the creation of a separate position, but it must be the assigned responsibility of an individual reporting to the chief fiscal officer. The academic resources of the library, university computer services, audio-visual resources, and television should be combined into a single division. This center would begin to apply and integrate the computer to the academic and learning processes. Its objectives would be to increase the accessibility and enhance the analysis and transfer of knowledge through the application of the developing technology of computers, libraries, and communication/presentation media (such as television, tapes, remote terminals, CRTs, and the like).

The computer is the enabling device for an academic resources center. Its applications are continuing to develop at an extremely rapid rate. The establishment of such a center will enable the early involvement of a powerful new capability serving student, faculty, and administrative needs. Such centers are under development at the University of Akron, Cleveland State University, Wright State University, and Ohio State University.

Close liaison between the proposed regional computer centers and the head of the academic resources center at each university must be maintained to ensure proper support of instructional applications.

Auxiliary Enterprises

AUXILIARY ENTERPRISES are service operations conducted for the benefit of students and faculty. Since these enterprises are completely controlled and funded by the individual university, their expansion or curtailment does not require state approval nor are state funds made available for these purposes. Fees are charged for these services, and they are intended to be self-supporting.

At Ohio's public universities, the major auxiliary enterprises—in terms of monies expended—are:

- Residence and dining halls
- Student unions
- Bookstores
- Intercollegiate athletics
- Student health services

Other auxiliary enterprises of lesser importance include airports, parking lots, printing services, married student housing, golf courses, campus bus services, supply centers, and ice rinks.

Auxiliary enterprises are staffed by 5,200 full-time and 7,500 part-time employees including students. For fiscal 1968, these operations expended $87.9-million and generated revenues of $88.2-million, for a statewide surplus of $330,000. As a percent of total university operating expenditures, these operations ranged from a low of 3.4% at Wright State University, to a high of 39.9% at Bowling Green State University. In absolute dollars, expenditures for auxiliary enterprises ranged from $174,000 at Wright State University to $28.7-million at Ohio State University.

The current bonded indebtedness for auxiliary enterprises is approximately $190-million with annual debt service requirements of $14-million. These debt issues have maturities extending to the year 2006. The current level of indebtedness will increase rapidly over the next five years because of new auxiliary enterprise facilities now under construction or being planned.

The table below summarizes the scope of these operations in the 12 Ohio universities for fiscal 1968. Universities which house a large percentage of their students, such as Bowling Green State University, Miami University, Kent State University, Central State University, and Ohio University incur the larger percentages of total operating expenditures for auxiliary enterprises.

SUMMARY OF AUXILIARY ENTERPRISE OPERATIONS — FISCAL 1968
(Thousands of Dollars)

UNIVERSITY	INCOME	EXPENDITURES	SURPLUS OR (DEFICIT)	FULL-TIME STAFF	PERCENT OF TOTAL UNIVERSITY EXPENDITURES
Akron	$ 3,039	$ 3,085	$ (46)	175	18.4
Bowling Green	12,027	11,293	734	610	39.9
Central	1,703	1,816	(113)	100	29.8
Cincinnati	6,180	6,472	(292)	380	10.4
Cleveland	1,081	1,048	33	30	10.1
Kent	10,270	11,792	(1,522)	550	26.2
Miami	8,503	8,949	(446)	520	34.2
Ohio State	30,004	28,722	1,282	2,200	21.6
Ohio	11,002	10,728	274	475	12.6
Toledo	2,649	2,517	132	125	15.4
Wright	273	174	99	18	3.4
Youngstown	1,451	1,256	195	28	13.3
Total	$88,182	$87,852	$ 330	5,211	

The following paragraphs present separate discussions of each of the five major types of auxiliary enterprises at Ohio's universities.

Residence and Dining Halls

In 1967/68, expenditures for residence and dining hall activities consumed 48% of all auxiliary enterprise funds throughout the state. The results of these operations ranged from a surplus of $1.74-million at Ohio University to a deficit of $260,000 at Miami University. However, these figures must be viewed cautiously, since the debt service reserve for repair and debt retirement as well as the levying of administrative charges is not consistent among the universities. For example, Miami University charged this enterprise over $2-million for these items, including an administrative charge of $165,000. The table above right, "Summary of Residence and Dining Hall Operations," details the results of these operations at the individual universities.

Plans for or actual construction of additional dormitories with related dining facilities exist at the University of Akron, Bowling Green State University, Central State University, the University of Cincinnati, Kent State University, Miami University, Ohio University, the University of Toledo, and Wright State University.

SUMMARY OF RESIDENCE AND DINING HALL OPERATIONS — FISCAL 1968
(Thousands of Dollars)

UNIVERSITY	INCOME	EXPENDITURES	SURPLUS OR (DEFICIT)	RESIDENT STUDENTS
Akron	$ 750	$ 970	$ (220)	900
Bowling Green	6,920	6,950	(30)	8,200
Central	1,250	1,300	(50)	1,200
Cincinnati	3,470	3,360	(110)	4,000
Cleveland	110	120	(10)	165
Kent	6,350	6,570	(220)	7,000
Miami	6,140	6,400	(260)	7,000
Ohio State	8,170	8,000	170	11,500
Ohio	9,090	7,350	1,740	8,700
Toledo	570	510	60	1,100
Wright	20		20	
Youngstown	230	170	60	200
Total	$43,070	$41,700	$1,370	49,965

Food services are operated by all universities except Youngstown State University, Cleveland State University, the University of Cincinnati, Wright State University, and the University of Toledo, which utilize catered food services from independent contractors. University-operated food service activities include the purchase, storage, preparation, and serving of food on campus.

Bookstore

Bookstore operations had revenues of $10.1-million versus expenses of about $9.2-million for a surplus of $970,000 during fiscal 1968. This enterprise is second only to residence and dining halls in dollar importance. Bookstore operations usually generate a profit for the university. Only Ohio University lacks a bookstore on its main campus. Branch campuses are serviced by most of the associated universities through extensions of the main campus store. The table below, "Summary of Bookstore Operations," shows the results of bookstore operations at each university for the 1968 fiscal year.

SUMMARY OF BOOKSTORE OPERATIONS — FISCAL 1968
(Thousands of Dollars)

UNIVERSITY	INCOME	EXPENDITURES	SURPLUS OR (DEFICIT)
Akron	$ 1,066	$ 932	$134
Bowling Green	858	738	120
Central	161	162	(1)
Cincinnati	1,370	1,307	63
Cleveland	725	718	7
Kent	1,507	1,346	161
Miami	720	577	143
Ohio State	2,255	2,127	128
Ohio	215	208	7
Toledo	973	871	102
Wright	184	173	11
Youngstown	99	4	95
Total	$10,133	$9,163	$970

Student Union

Ohio universities spent $7-million on student union operations during fiscal 1968. An overall income of $6.3-million and an overall deficit of $714,000 were reported for this enterprise. The major source of income is student services fees apportioned to cover student union costs. All universities operate a student union, but the services provided vary from a small lounge area and several conference rooms to the inclusion of game rooms, a bowling alley, dining rooms, snack bars, a cafeteria, and patio. The universities with the highest incidence of resident students provide the most complete range of activities.

Intercollegiate Athletics

Intercollegiate athletics constitute a significant portion of auxiliary enterprise expenditures. During fiscal 1968, a total of $7.3-million was spent for these activities. Expenditures ranged from $2.7-million at Ohio State University to $102,000 at Central State University and no recorded expense at Wright State University. Deficits ranged from $2,290 at Bowling Green State University to $575,000 at Ohio University. However, Ohio State University, the University of Toledo, and Youngstown State University reported surpluses for the same year. Results of this operation at each state university are shown in the table below, "Summary of Intercollegiate Athletics Operations." The deficits and surpluses recorded are a result of the amount of monies allocated to this activity from the current general fund or student service fees.

SUMMARY OF INTERCOLLEGIATE ATHLETICS OPERATIONS — FISCAL 1968
(Thousands of Dollars)

UNIVERSITY	INCOME	EXPENDITURES	SURPLUS OR (DEFICIT)
Akron	$ 148	$ 200	$ (52)
Bowling Green	505	507	(2)
Central	68	102	(34)
Cincinnati	375	733	(358)
Cleveland	131	131	0
Kent	228	718	(490)
Miami	260	682	(422)
Ohio State	2,895	2,702	193
Ohio	282	857	(575)
Toledo	708	704	4
Wright			
Youngstown	9		9
Total	$5,609	$7,336	($1,727)

Student Health Service

The Board of Regents defines this activity as an auxiliary enterprise, but the Auditor of State requires this function be treated as a student service. For purposes of this report, we have included this function as an auxiliary enterprise. Student health service facilities vary considerably due to the nature of each university—resident or commuter. Miami University, with 7,000 resident students and no major medical facilities in the local community, operates a 90-bed hospital with a full-time professional staff of five physicians and nine nurses. Only modest health service facilities are operated at the University of Akron, Cleveland State University, the University of Toledo, and Central State University.

Other

Other auxiliary enterprises operated by the universities include airports at Miami University, Ohio State University, Ohio University, and Kent State University. Flight training is provided to students through aeronautical courses and Air Force and Navy ROTC classes. Also, charter flights are available for staff use, and some private use is made of airport facilities.

A central service center is operated by many universities to meet office supply, duplication, and printing needs. Married student housing is provided at a number of the universities. Parking operations produce revenues of $398,000 at the University of Cincinnati, $267,000 at the University of Akron, $715,000 at Ohio State University, and $93,000 at Youngstown State University. Bowling Green State University and Ohio State University operate ice rinks. Kent State University maintains a campus bus service. Thus, various auxiliary enterprises are required at individual universities, depending upon the number of resident students and the capabilities of the nearest municipality to meet student service needs.

Appraisal of current operations

In general, the first- and second-level management of auxiliary enterprises at Ohio's universities is effective and competent. However, managers are severely handicapped by a lack of the timely operating data required for fully effective management. Many enterprise managers receive no profit-and-loss reports, nor do they have established profit goals or monthly budgets with which to measure operational results.

This lack of support has caused many auxiliary operations to establish their own accounting and record-keeping staffs to supply basic operating data on a daily, weekly, or monthly basis. Since the central accounting department must maintain auxiliary enterprise records, the information maintained by independent bookkeeping staffs is a needless duplication of effort. A lack of understanding in preparing operating statements on an accrual basis is a major contributor to the present inadequacy of central accounting reports for auxiliaries. Independent bookkeeping staffs are most prevalent in bookstore and residence and dining hall operations, the two major enterprises, since their needs are the greatest.

Auxiliary enterprises are an integral part of the overall university operation and campus life. Most of these services are essential to the successful operation of a university campus. Residence and dining hall operations are one of the most vital activities, and substantial investments and operating expenses must be incurred. Food service operations are excellent at almost every university which conducts its own activities, but catered food service is not providing the same variety and taste in food, with the exception of the University of Cincinnati.

Auxiliary enterprises require various degrees of management and administrative support. Consistent and reasonable charges are not being made to these enterprises for administrative services rendered, even though the services are generally inadequate at present. As a result, the managers of these operations do not know their true costs and cannot establish fees and charges to properly cover their costs. The true cost of operating auxiliary enterprises cannot be determined unless some provision is made for recording cross charges for the exchange of services.

Auxiliary enterprises, which provide revenues of $88.2-million a year in Ohio's universities, constitute a major business activity, but they are not receiving the support and attention they deserve. Professional assistance is needed to improve existing work flows and recordkeeping activities, establish work standards and staffing requirements, review existing methods and procedures, and increase the use of data processing. At present, auxiliary enterprise managers are struggling to meet their management needs as best they can on an individual basis. Policy and procedure manuals are needed; profit goals and management performance standards must be established; and improved service must be obtained from central administrative staffs.

Recommendations for improvement

Implementation of the following recommendations will improve the management capabilities of auxiliary enterprises and facilitate effective control of costs.

1. *Furnish auxiliary enterprise managers with adequate financial and operating reports to exercise effective control of their operations.*

Managers must receive timely reports clearly representing the current fiscal and operational status of their functions in order to properly direct and control their employees. This information is generally not available. If it is available, its format does not lend itself to ready analysis or action.

The basis for meaningful management reports must be good budgetary practices which establish realizable profit goals and show a monthly breakdown of the goal for regular review. At Miami University, auxiliary enterprise managers receive a well-designed monthly operating statement showing actual income and expenditures for the current month, year-to-date, and variance from budget both in dollars and percent form. With the use of data processing, monthly operating statements and budget reports can be designed to show the monthly and year-to-date position of actual versus budgeted revenue and expense.

The monthly receipt of essential fiscal information is not sufficient to support the management needs of residence and dining halls and bookstores. For these operations, additional data must be provided on a more frequent basis. The daily cost of meals served in each dining hall is a key ingredient in exercising proper control over food service operations. Inventories of food items, books, and supplies must be controlled. Gross margin controls by class of items must be monitored for the bookstore and student union. Custodial and housekeeping efforts must be compared with established standards.

To effectively operate auxiliary enterprises, managers must be continually appraised of the current status of their operations. With adequate information, it is estimated that the cost of auxiliary enterprise operations can be reduced 0.5% for annual savings of $450,000.

2. *Discontinue independent accounting functions by auxiliary enterprises and centralize all accounting under the chief fiscal officer.*

Maintenance of independent accounting functions by auxiliary enterprises is not only a duplication of effort but also an unnecessary expense. This condition is primarily due to the failure of central accounting departments to furnish first-level management with essential operating data. The proper solution to this problem is to require the central accounting department to meet these needs.

Central accounting groups can better meet the operating report needs of auxiliary enterprises because of their existing data processing support and accounting staff. Also, centralized and uniform treatment of all recordkeeping functions will reduce manpower requirements and expedite timely issuance of operating reports. Consolidated statements of auxiliary enterprise operations as well as more timely individual reports will be available for top management review.

At each university, individual auxiliary activities are relatively minor functions, compared with the total expenditures of the institution. These operations conduct their affairs independently and do not utilize all the central services available. Collectively, however, these enterprises constitute a major university function and should be serviced by the central accounting staff.

It is estimated that a minimum of $325,000 could be saved annually through the elimination of independent accounting staffs.

3. *Require approval of new dormitory and dining hall construction by the Ohio Board of Regents.*

A proper balance must be maintained between physical facilities devoted to academic purposes and those associated with auxiliary enterprises. The primary purpose of the university is education. Therefore, any long-range plans for the expansion of auxiliary enterprises must be coordinated with those for academic functions. This is especially true for residence and dining facilities.

The current bonded indebtedness of state-supported universities in Ohio is approximately $190-million, and the annual debt service charge including reserves is about $14-million. This total debt will increase as existing construction plans are completed. Almost every university plans to construct new auxiliary enterprise facilities. Representative planned additions to existing dormitory space are shown below.

University	*Additional Students Accommodated*
Akron	1,600
Bowling Green	600
Central	300
Cincinnati	1,800
Kent	2,700
Miami	600
Toledo	2,700

After funds have been committed to the construction of new residence halls, a like number of resident students must be enrolled to meet the debt service requirements of these new facilities. None of the universities can afford to operate these expensive facilities at 50% to 60% capacity. A less obvious effect is the resultant increase in future operating costs in order to properly maintain and repair these new facilities.

Some new residence halls planned are not compatible with the intentions of the Master Plan, since they exceed enrollment quotas established by the Master Plan. However, until recently, the open enrollment policy of the state enabled individual universities to justify variance from the Master Plan. The Board of Regents now has approval power with respect to construction of academic facilities. The interdependence of these two activities logically requires that the Board of Regents exercise approval power over the construction of dormitory and dining hall facilities as well.

4. *Recognize the true costs of auxiliary enterprises by charging a reasonable fee for management and administrative services.*

Auxiliary enterprises are intended to be self-supporting. Thus, they should produce revenue equivalent to their actual operating costs. Recordkeeping and administration charges represent actual, valid cost elements and therefore should be covered by revenue or fees. Failure to make such charges amounts to subsidizing auxiliary enterprises.

At present, there is no consistent method of levying such administrative charges against auxiliary enterprises at Ohio's universities. Some universities have attempted to recognize these cross charges for services rendered, but only to the degree that the auxiliary enterprise involved could absorb the cost.

At Kent State University, administrative charges are based upon a percentage of the revenue generated by each auxiliary enterprise, ranging from 12% to 2%. At the University of Akron, Youngstown State University, Cleveland State University, and the University of Toledo—to mention a few—no administrative charges are made. In some cases, not even utility, custodial, and maintenance costs are charged to these operations on a fair basis for services rendered. At Miami University, administrative charges are assessed against the residence and dining hall operation based upon actual administrative time utilized. In summary, because of the inconsistencies in determining the costs of operation, comparison of the financial aspects of auxiliary enterprises among the universities can be misleading.

The basis for charging reasonable management and administrative costs to these activities can be calculated in various ways: using capital assets, total expenditures, or actual time spent by management, to mention a few. Equally important is the need to credit auxiliary operations with reasonable income for use of their facilities for unrelated activities. If auxiliary enterprise facilities are used for administrative or instructional purposes, interdepartmental charges should be assessed.

Unless the managers of auxiliary enterprises are fully cognizant of costs, they cannot exercise proper management control of their activities. With accurate cost information, more effective management analysis of operating costs is possible.

5. *Establish fees and charges so auxiliary enterprises will be self-supporting.*

After all administrative as well as operating costs have been identified and properly assigned, the manager of each enterprise should analyze his total expenses and develop a realistic fee assessment. The two major enterprises, residence and dining halls and bookstores, should clearly cover all costs and generate a profit adequate to meet debt service requirements. Reserves for equipment and facility repair and replacement should also be established. Ohio State University and the University of Cincinnati are examples of universities which show profitable operation of these two activities.

In the case of the bookstore, traditional retail markups on textbooks, used books, and general supplies are established. Sundries and soft goods have less structured pricing policies. Prices must remain competitive with local stores, but profits could be increased through better merchandising techniques, improved pilferage control, and increased inventory turnover. The maintenance of established gross margins by class of items together with a firm control over personnel costs will ensure profitable operations and adjustments in prices when required. Bowling Green State University, the University of Toledo, Kent State University, and Miami University are examples of universities which show profitable operation of this enterprise.

Food prices should cover all costs related to cafeteria and dining hall operations. Housing charges should reimburse the university for its investment and operating expenses. Those universities providing parking facilities, printing services, and airport facilities should cover all costs with the fees and charges for these services.

The operation of student union, intercollegiate athletics, and student health service enterprises necessitates an allocation of student services fees to cover their operating costs. At present, most universities allocate student services fees to cover the deficits in these operations and then use the remaining funds to support student services. This procedure relegates student services to a secondary role from a funding standpoint and does not ensure the most effective management of the resources utilized by these three enterprises. Proper fiscal planning to meet established levels of efficiency and profit is lacking for auxiliary enterprise activities.

Residence and dining halls, bookstore, printing service, central service, parking, and airport operations should be conducted on a pure profit-and-loss basis. Revenue from these operations should cover all costs and produce sufficient profits to meet appropriate reserve requirements and defrayment of other enterprise costs to the degree desired. For student union, student health service, and intercollegiate athletics operations, levels of approved expenditure must correspond with the planned allocation of student services fees. This provides the framework for assessing management effectiveness and planning appropriate fees.

Although it may not be desirable for every auxiliary enterprise to generate profits, these operations should break even in total, so funds from other activities are not needed. In fiscal 1968, $1.2-million was transferred from previous auxiliary fund balances or other funds to support auxiliary enterprise activities. A reduction in this support requirement would free funds for other purposes and represent a saving to the state.

6. *Institute uniform accounting and reporting procedures for the student health centers involving the Auditor of State and Board of Regents.*

The Auditor of State has ruled that student health centers represent a student service and, as such, are part of university operations. In reports to the Auditor, student health centers are so handled. The Board of Regents, however, has designated student health centers as an auxiliary enterprise, and they are dealt with in this manner in Board of Regents reports.

The difference in classification is a problem to the reporting university because it necessitates special handling in the preparation of reports. Also, it prevents the two sets of reports, both of which are in the public domain, from presenting consistent data. This is confusing to the public and the boards of trustees at state-supported universities. The confusion should be eliminated through the establishment of one classification. Based upon our study, the treatment of student health centers as a student service seems most appropriate.

7. *Provide auxiliary enterprises with systems and procedures guidance and assistance.*

The independent status of auxiliary operations has required managers to individually develop operating procedures, work standards, recordkeeping systems, and policy and procedures manuals as best they could. The proposed management services function, as recommended in the Systems and Data Processing section of this report, will provide the vehicle to render systems and procedures assistance to these activities.

Bookstore operations should review existing methods of receiving, marking, and shelving books. Store layout and gross margin controls need improvement. Interdepartmental charge systems for using central services and supplies should be streamlined and simplified. Operations analysis of supply center and printing service procedures should be conducted. Work standards for food production, housekeeping, and custodial activities are required. Much of the recordkeeping and operating data requirements of the bookstores and residence and dining hall facilities should be automated by using the existing data processing capability at each university.

Improved forms design, streamlined data collection procedures, establishment of work standards and policy and procedures manuals, as well as the increased use of data processing can reduce clerical costs and increase management time. Auxiliary enterprise managers should be able to employ the resources of the management services function for assistance in effectively managing their operations. Improved systems and procedures in auxiliary operations should save $150,000 annually.

8. *Maintain appropriate control of university airport operations by establishing comprehensive income and expenditure reports.*

Airport operations are conducted at Kent State University, Miami University, Ohio University, and Ohio State University. In fiscal 1968, expenditures for these operations totaled about $788,000, and a deficit of $66,000 was incurred. A review of operating statements indicated that all appropriate instructor costs were not being charged to these activities. Also, revenues generated by these facilities are not totally adequate to support required plane replacement programs.

These facilities are used to meet the aeronautical instructional needs of the academic program and the ROTC programs at the universities. The airports also constitute a public service to the local municipality by providing landing, servicing, and plane storage facilities for community use. It is important that the level of airport activities be closely controlled to adequately meet the instructional needs of the university. Any additional services provided by the airport for public use must be self-supporting. Revenues generated must be consistent with the cost of services rendered, and this balance must be continually reviewed to prevent unwarranted demands on the limited funds available.

Personnel

PERSONNEL ADMINISTRATION involves employee recruitment and selection, training, performance evaluation, attitude measurement, counseling, orientation, wage and salary administration, labor relations, employee record maintenance and retention, and benefit program administration. In some schools, employee communications are also a responsibility of this department.

The 12 universities in the Ohio system of public higher education are staffed by over 30,000 full-time and about 16,000 part-time employees. The table shown below depicts the makeup of these personnel for each university. Total employment at each university ranges from approximately 21,000 at Ohio State University to 464 at Central State University.

The nonacademic personnel group consists of nonclassified and classified employees. The classified group of about 23,000 employees includes the maintenance, custodial, food handling, secretarial, and clerical work force necessary to the operation of the universities. This is the only group of employees serviced by university personnel departments.

Unions are active on the university campuses, and representation is largely centered in two unions—The American Federation of State, County and Municipal

EMPLOYED PERSONNEL AT UNIVERSITIES — FISCAL 1968

	NONACADEMIC							
	ADMINISTRATIVE		CLASSIFIED		ACADEMIC		TOTAL	
UNIVERSITY	FULL TIME	PART TIME	FULL TIME	PART TIME	FULL TIME	PART TIME	FULL TIME	PART TIME
Akron	180	—	459	261	400	—	1,039	261
Bowling Green	345	36	923	220	579	473	1,847	729
Central	47	—	234	15	132	36	413	51
Cincinnati	1,120	2,062	3,032	904	1,219	1,159	5,371	4,125
Cleveland	129	—	340	31	275	223	744	254
Kent	200	—	1,500	—	800	—	2,500	—
Miami	233	—	1,016	32	605	72	1,854	104
Ohio State	1,781	—	7,638	4,054	2,580	4,855	11,999	8,909
Ohio	193	—	1,132	36	746	584	2,071	620
Toledo	107	—	385	—	583	124	1,075	124
Wright	63	1	264	11	192	29	519	41
Youngstown	35	—	314	188	346	376	695	564
Total	4,433	2,099	17,237	5,752	8,457	7,931	30,127	15,782

Employees and the Ohio Civil Service Employees Association. Craft unions of the AFL-CIO are also represented. At the University of Cincinnati alone, 13 unions are active. Union membership averages about 21% of the total classified employment at the 12 state-supported universities in Ohio.

Most universities provide personnel services such as evaluation programs, pre-employment testing and interviewing, general applicant screening and recruiting, and benefit program administration for classified employees. These services are provided through a central personnel office or department. However, because of the large turnover of maintenance and custodial employees, such functions as recruiting, interviewing, and training are often performed by the physical plant department. The personnel departments consistently fail to provide orientation programs, exit interviews, and applicant physical examinations.

Record management programs for classified employees contain the sick leave, vacation, and absence data required by law. Maintenance and retention of these data are manual operations, although the University of Cincinnati and Miami University are developing computer systems to reduce this clerical load. Also, security copies of vital employee records are not retained in any systematic manner.

The nonclassified group includes presidents, vice presidents, administrative directors and managers, and technical specialists. This group of 6,531 employees is responsible for the management, coordination, and development of plans, programs, and administrative operations necessary to the conduct of university affairs.

At all universities there is no centralized personnel function supporting the nonclassified group. Personnel services for this group are not structured, and published policies and procedures for personnel administration do not exist. Recruitment is performed by individual department heads and senior members of university management. Formal salary administration programs have not been developed. Job descriptions for the various nonclassified positions have not been prepared, so systems of job evaluation are not employed. Orientation for nonclassified personnel is usually performed on an individual basis, or not at all. Benefit program administration for these employees is often included in the program for classified personnel.

Responsibility for the personnel needs of the academic group is not assigned to any single organization. Although ultimate responsibility for administration of faculty personnel programs is assigned to the head of academic affairs, university expansion and growth makes it increasingly difficult for him to devote the time required to adequately perform these duties. Personnel functions for the faculty group are performed by individual department chairmen or other responsible personnel in each major academic organization.

Though considerable variation exists among departments and universities, aspects of certain personnel functions are performed in an informal manner. Examples include recruitment, salary survey work, personnel development programs, employment and compensation negotiation, and orientation. Faculty contracts, applications, and related personnel data are frequently filed in the offices of individual department chairmen or college deans.

Appraisal of current operations

Formal personnel departments for the state-supported universities in Ohio originated with the need to administer programs and procedures for employees classified under civil service. The magnitude of academic and nonacademic personnel administration at the state-supported universities has grown substantially during the last decade, but the personnel function has not significantly expanded beyond the original need to serve classified employees. As student enrollment continues to increase, the scope and complexity of personnel administration will become increasingly important to the proper conduct of university affairs.

Where administrative personnel are not classified under civil service, there is no personnel department to administer a formal program. The only central service performed for these employees is benefit administration.

The lack of job descriptions and systems of wage and salary administration for these personnel inhibits locating and retaining employees of the desired quality. Salary levels are not kept competitive with private industry. Also, there is no means of comparing the personnel needs of one university with potential candidates employed in equal or lesser capacities at other universities. Frequently, qualified administrative personnel are lost to the state-supported system of higher education in the individual's quest for a more responsible position. The current situation in which each employee's superior is the only source of personnel information is neither reliable nor objective.

The basic personnel needs of classified employees are serviced by the personnel department or office at each university. Improved services including a university news publication and a personnel handbook are under development at Miami University, Ohio University, the University of Cincinnati, and Wright State University.

Since many universities are located in highly industrialized areas with low unemployment rates, the craft and custodial wages authorized by state civil service classifications fail to compete effectively with local wage structures. As a result, annual turnover rates among university civil service employees are very high, as shown below. Although several schools fail to maintain data on personnel turnover, all recognize it as an important problem.

ANNUAL CLASSIFIED PERSONNEL TURNOVER

Central	20%
Cincinnati	25%
Kent	33%
Miami	22%
Ohio State	25%
Ohio	25%
Wright	95%

Ohio civil service laws prohibit negotiating contracts with employees and recognition of employee bargaining units. As a result of the emergence of unions among the classified employees, most universities deal with the various bargaining units on an informal basis. This has resulted in somewhat cumbersome procedures.

Although the benefit program for faculty personnel is centrally administered at all universities, other personnel services for this group vary widely. Personnel recruitment, orientation, development, and compensation control are performed autonomously by individual departments. Faculty personnel programs lack formalized job descriptions, salary surveys, compensation control, recruitment, and centralized record systems which would ensure professional guidance and consistency of policy.

Recommendations for Improvement

Specific recommendations for overcoming the absence of personnel programs which include all employees of state-supported universities are discussed in three segments: nonacademic personnel, academic personnel, and labor relations. They will provide a sound basis for establishing an appropriate personnel function.

Nonacademic Personnel Administration

Nonacademic employees of state universities include administrative, clerical, and custodial personnel. They direct the administrative affairs of each university, perform important clerical tasks, and maintain the physical plant. Therefore, it is extremely important to have a well-designed personnel program for this group.

1. Broaden the responsibility of the personnel departments to include all nonacademic personnel and provide a comprehensive program to serve them.

The existing personnel function at each university must be expanded to serve all nonclassified administrative, professional, and technical personnel, as well as civil service employees. This expansion will provide consistency in the administration of general personnel policies. In addition, it will assure that all employees responsible for the effective administration of the university receive essential personnel services.

Therefore, immediate attention should be given to establishing a comprehensive personnel program. This should incorporate the following elements:

- Wage and salary administration including preparation of job descriptions for use in job evaluation and wage surveys.
- Employee records to serve as a basis for administering salary and benefit programs.
- Performance evaluation of employees to assure a consistent system of merit rating is used by supervisors as part of salary administration.
- Recruitment of all nonacademic personnel by the personnel department in accordance with specifications established by the requesting department.
- Termination processing of employees including exit interviews. This will serve to monitor supervisory performance, employee attitudes and morale, as well as the competitive market for personnel.
- Orientation of new personnel to explain university operations, policies, procedures, and benefit and compensation programs.
- Pre-employment physical examinations to eliminate acceptance of applicants with active histories of physical problems.

Implementation of this recommendation should improve the employees' work environment through the consistent and impartial application of sound personnel policies. In addition, the universities will benefit from the greater stability and higher quality of their employees.

2. Maintain administrative and professional salary levels competitive with local and national industry.

As part of their wage and salary programs, the expanded personnel departments should increase their periodic comparisons of university salary structures with those of outside organizations seeking personnel of similar qualifications. Salaries must be competitive, or universities will be unable to attract new employees and will experience increasing difficulty in retaining current employees. Salary structures within the universities must also be consistent in terms of responsibility and authority, or dissatisfaction will result. Particular care should be taken to ensure that academic and administrative salaries are equated for similar levels of responsibility and authority.

The results of a salary analysis of a cross section of nonclassified administrative positions show that compensation levels at the 12 state-supported universities in Ohio are generally below those in industry. The midpoint salaries in a national Ohio-based corporation were compared with those of the following positions in Ohio's universities:

- Personnel Director
- Assistant Personnel Director
- Budget Officer
- Purchasing Agent
- Assistant Purchasing Agent
- Controller
- Assistant Controller
- Data Processing Director
- Manager of Systems and Programming
- Manager of Computer Operations
- Plant or Maintenance Engineer
- Computer Programmer
- Systems Analyst
- Chief Accountant

For the schools which could be compared accurately, three averaged 5% to 10% below comparative industry salaries; five averaged 14% to 25% lower; and two were approximately 35% below industrial salary standards for comparable positions.

Although this comparison is not comprehensive nor can it be completely accurate because of the lack of university job descriptions, a need for a detailed review of the existing university compensation structures is indicated. Remedial steps must be taken where necessary to attract and retain qualified personnel.

3. Make management planning and development a function of the personnel department.

A program of management planning and development should be administered by the personnel department to assist each university in planning its organizational structure. This approach will determine the adequacy or inadequacy of available employees to meet the needs of the organizational plan. Furthermore, it will ensure that adequate backup personnel exist and the organization does not falter when personnel resign or are promoted. A program should be instituted to ensure internal development of a trained management team. Where this is not practical in terms of existing personnel, a recruitment program should be established.

4. Establish a mechanized time-reporting and control program for employee attendance information.

At present, little progress has been made in automating absence and attendance records. Employee time and absenteeism reports are manually prepared by individual departmental secretaries and sent to the payroll department. However, they are not always forwarded to the personnel department for inclusion with permanent personnel records. No formal program exists to ensure that this information is acquired in a consistent and timely manner.

Control of this information is very important. Compensatory leave time for employees working overtime could easily be under- or overstated, and accumulated vacation days could be lost or overpaid. In addition, sick leave information could easily be misreported with a resulting impact on the benefit program. Moreover, the manual accumulation of time data at the departmental level could encourage such practices as continuous late starting and early quitting, extended lunch hours, and the granting of unauthorized short-duration leaves by supervisors.

Experience has shown that organizations which do not insist upon mechanized time-recording systems often lose 10% of the available work time of their employees. Although some mechanized time reporting systems are operative at such schools as Kent State University and Miami University, only about 40%, or 9,200 of the 23,000 classified employees, are covered by such programs. Without such mechanized control procedures, a state-wide loss of 1.4-million hours per year could easily occur and remain undetected.

The development and installation of a comprehensive mechanized time-recording program for nonsupervisory employees at each university would ensure that all absenteeism, sick leave, vacation, compensatory time, and actual work hours are accurately and consistently reported. In addition, it would provide accurate information for payroll accounting and benefit program administration. Additionally, this program would eliminate the need for individual departments to manually report these data on an employee basis to the personnel department. This information should be collected as a function of the mechanized time-recording system.

Exception reports should be printed for action by individual department heads.

The elimination of clerical effort and the recovery of 1.4-million man-hours now potentially lost each year are estimated to produce annual savings of $3.5-million. Furthermore, recovery of paid employee time not now productively utilized could substantially reduce the requirement for additional classified personnel as enrollments continue to increase at all universities.

5. Develop a microfilm program for all permanent personnel records.

Evaluation of current personnel recordkeeping practices reveals no system for maintaining a security file of vital information. If existing records are destroyed by fire or vandalism, the re-creation of seniority patterns and performance data would be quite difficult.

A microfilm program would materially reduce the maintenance costs and storage space requirements of the proposed expanded personnel function. In addition, it would provide immediate access to any required information and permit retention of a security copy of all information in a separate repository. Initial costs for this activity depend upon the level of sophistication desired but should not exceed an average of $5,000 per university. Maintenance and equipment rental costs are estimated to average $2,000 per year per university.

Academic Personnel Administration

Although this study was not concerned with the academic aspects of university operations, it is believed personnel services to the faculty group are an important element of university management. The faculty is the keystone of a successful university. High morale and competence of the faculty assure continued attainment of the university's main objective—the education of its students. The following recommendations are offered to improve personnel services to this group.

6. Establish an academic personnel function.

During 1968/69, the state-supported universities employed approximately 16,400 faculty members, including 7,900 part-time instructors. The size of this group grows each year as the universities continue to expand. Therefore, a formal academic personnel function reporting to the senior academic officer should be established at each university. At the larger universities, a department should be organized and staffed to control and administer the academic personnel program. At the smaller universities, responsibility for academic personnel administration should be assigned to a specific individual.

Currently, processing of personnel matters for the faculty group is usually a part-time activity of the senior academic officer at each university and the various deans and department chairmen in the individual colleges. The size of the faculty and its intended growth are such that academic personnel activities should be consolidated under one department or person. Thus, responsibility can be assigned and good coordination maintained.

7. Coordinate all faculty recruiting through the proposed academic personnel function.

At Ohio universities, each department head, working closely with his dean, performs the recruiting for his department. Such participation is vital to the proper selection of new faculty members, so hiring responsibilities should not be taken away from the individual colleges. However, the proposed academic personnel function could better coordinate the administrative detail work. This new department should act as a central information source by maintaining a file of applications and records of potential faculty members for ready access. Some of the original search work required in faculty recruiting programs could also be performed by this function.

8. Establish a formal wage and salary program for academic personnel.

Academic salaries are now reviewed annually. Benchmarks available to the university are lists of faculty salaries published by other universities and by various educational associations, including the American Association of University Professors. Job descriptions should be written for each faculty classification. Through surveys, salary information should be developed for each field of specialty, in addition to the more commonly available data by rank and length of service. Then, a complete structure of salaries can be determined which will ascertain that the salary for each job is related appropriately to the market and not to the aggressiveness or inadequate information of a department head or dean.

This wage and salary program should be coordinated with similar efforts in the nonacademic personnel function so a proper salary balance is maintained between academic and nonacademic personnel.

9. Involve the head of personnel affairs in major decisions involving academic personnel problems.

If department heads or deans have serious problems involving the faculty, they should seek the advice of the head of the proposed academic personnel function. The head of this department should also have a voice in final decisions affecting personnel policies of the university. In this way, uniform policies can be administered to prevent future problems.

By monitoring personnel relations, the head of the proposed academic personnel activity will have a constant measure of faculty morale at the university. If serious situations requiring attention become evident, they should be discussed with the senior academic officer of the university.

10. Establish a formal personnel appraisal program for academic personnel.

Although a rudimentary appraisal program for academic personnel exists at each university, the procedures lack consistency in both application and criteria. In general, such programs are conducted on an informal basis for recently employed faculty members and are highly dependent upon individual department chairmen's recognition of the need for such appraisal. A more systematized structure of appraisal including formal reviews by the President and senior members of the academic staff is usually employed when tenure grants and upper-level promotions are involved.

Each university should develop a formal appraisal program whereby each faculty member is rated at least once a year. After this rating, a progress interview should be conducted so that the individual's weak and strong points are thoroughly reviewed. Most employees welcome such a program because it offers an opportunity to discuss their current status. A personnel rating program can also be used effectively to counsel new employees on their future career. If an individual is in the wrong environment, it can be determined quickly and a possible change suggested.

Labor Relations

Labor relations is of great importance to all state-supported universities. It was obvious at the outset of this study that union relations posed immediate, pressing problems for the Ohio system of public higher education. Consequently, a separate study was initiated so recommendations could be made before the opening of the 1968/69 school year. During the study, Kent State University, Ohio State University, Ohio University, and the University of Akron were visited.

Recommendations were documented in an interim report submitted to the Ohio Board of Regents on September 5, 1968. Changes in Ohio's Civil Service laws were suggested so the universities could establish collective bargaining arrangements with unions. It was recommended the bargaining unit consist of custodial workers, groundskeepers, draftsmen, equipment operators, domestic workers, and food service workers. Furthermore, bargaining would be limited to job-related issues within the powers of the boards of trustees.

To provide for consistency in agreements between universities and unions, it was suggested that the Board of Regents appoint a director or consultant to handle state-wide negotiations and develop ground rules for local negotiations. The presidents of the state universities agreed to this recommendation in a meeting held September 9, 1968.

Purchasing

ALTHOUGH UNIVERSITY purchasing functions are essentially service activities, they must also be considered cost oriented. Their basic objective is the acquisition of all materials, supplies, services, and commodities necessary to the operation and maintenance of the universities at the lowest cost compatible with quality and delivery requirements.

In achieving this objective, purchasing organizations are responsible for a substantial portion of the dollars spent annually by the state-supported universities. During fiscal 1968, purchasing department expenditures for Ohio universities exceeded $79.8-million. Over 300,000 purchase orders were issued. Expenditures for each university's major purchasing function are listed in the table at right. Construction expenditures are excluded from these data. As shown, Ohio State University's purchases accounted for almost one-third of the system's total expenditures, and Central State University's represented the smallest volume.

UNIVERSITY PURCHASES — FISCAL 1968
(Thousands of Dollars)

UNIVERSITY	GENERAL	BOOKSTORE	LIBRARY	FOOD	TOTAL
Akron	$3,550	$ 746	$ 218	$ 468	$4,982
Bowling Green	2,460	865	248	1,402	4,975
Central	550	171	60	325	1,106
Cincinnati	7,884	1,054	369	—	9,307
Cleveland	2,021	603	358	—	2,982
Kent	4,500	1,197	957	1,600	8,254
Miami	1,785	485	360	1,290	3,920
Ohio State	23,319	1,651	1,300	1,955	28,225
Ohio	6,416	—	466	2,468	9,350
Toledo	1,469	748	148	—	2,365
Wright	660	503	350	—	1,513
Youngstown	2,100	600	200	—	2,900
Total	$56,714	$8,623	$5,034	$9,508	$79,879

Organizational structures of the central purchasing functions are similar at each university. In most instances, the central or major purchasing function is the responsibility of a director who reports to the chief fiscal officer of the university. At a few universities, the supporting activities of shipping and receiving, central stores, and occasionally inventory and property control are directed by the purchasing department. At other universities, responsibility for unrelated activities such as reproduction facilities, automobile fleet control, typing pool, switchboard, and the mailroom is assigned to the director of the purchasing department.

Usually the purchasing functions of the library, bookstore, and food service organizations are independent of the central purchasing department. This division of purchasing responsibility developed since food, library books and periodicals, and bookstore items require specialized knowledge not generally available in central purchasing organizations. Additionally, it was believed that profit center operations should control their own procurement activities.

In fiscal 1968, the central purchasing groups as a whole procured 72% of the state university system's requirements. The purchasing operations of the library, bookstore, and food service groups accounted for the remaining 7%, 9%, and 12%, respectively. The table below portrays, in terms of percent of total expenditures of the central department, the usual categories of materials purchased for the universities.

PURCHASING EXPENDITURES BY CATEGORIES

Maintenance supplies and equipment	18%
Scientific equipment and supplies	15%
Outside services	12%
Furniture and furnishings	11%
Miscellaneous	10%
Office equipment	10%
Printing	8%
Instructional materials	6%
Office supplies	5%
Fuel	3%
Motor vehicles and expense	2%
	100%

Although a variety of procedures are used in the purchasing process, the common ones are as follows:

- Annual Contracts—Vendors contract to supply items for one year at a set price. Minimum quantities are agreed upon, and shipments are made on an incremental or demand basis. Coal and gasoline are examples.
- Petty Cash and Local Purchase Orders—Items are purchased locally with petty cash, or a copy of a handwritten purchase order is given to and used by the vendor as a billing invoice.
- Inter-University Contracts — Consortium agreements are based on the pooling of large-volume items from individual universities. Occasionally suppliers may extend state-negotiated prices to individual universities.

Procedural controls take three forms:

- Management approval of purchase requisitions and orders
- Competitive bidding practices
- Budgetary fund encumbrance controls

In many instances, procedural controls exist but are not documented. Individual purchasing department procedures frequently require the director to be cognizant of all orders over $500. Some departmental procedures require that all purchasing orders bear the director's signature. Less than half of the state universities have programs to consolidate requirements for particular items or maintain a purchasing calendar. There is infrequent evidence of programs for reducing the number of purchasing orders written. Few procedures include the use of handwritten orders or petty cash funds for small-volume, local purchasing.

Appraisal of current operations

The purchasing organizations of all universities work actively to procure materials, supplies, and services with due consideration of cost, quality, and delivery. Operational effectiveness is difficult to evaluate because of inadequate statistical data. A general lack of data processing support contributes to the problem, but cannot justify the absence of information needed for effective purchasing management.

Few purchasing organizations produce control reports. However, Ohio University and Miami University each publish an annual report which lists statistics showing movement toward specific goals, cost comparisons, analysis of purchases by type and volume, percentage of total purchases, and vendor performance data. Other data such as the number of purchase orders generated were usually reported.

Although price negotiation is normally part of the purchasing cycle, individual university practices vary extensively. In most universities, price negotiation is the sole responsibility of the purchasing organization. Occasionally, the requisitioning department aids in significant price negotiations. In one instance, the requisitioning departments conduct almost all price negotiations relating to high-cost items. Generally, however, budgetary fund encumbrance controls minimize the possibility of a department exceeding its budget.

In most universities, proper identification and analysis of high-volume items and vendor performance are not available. Universities are handicapped in price negotiations when they cannot accurately predict annual and normal usage of high-cost or high-volume items. Without this information, they cannot demand discounts based on factual knowledge of requirements. Lack of vendor performance data hinders effective negotiations since contract prices must be based on delivery and quality performance data.

Finally, the lack of data necessary for activity evaluation has manifested itself in the generation of cumbersome control procedures, particularly for procurement of small orders. This in turn has increased professional and clerical work loads and complicated purchasing activities. These procedures include insistence on written bids for orders as small as $300 and failure to employ order consolidation practices such as blanket purchase orders and petty cash purchase procedures.

Inventory controls most employed by universities include manual stock level monitoring and occasional generation of usage reports based upon inventory withdrawals. Controlled physical inventories are not the rule, and no effective computerized inventory control system exists at any university. Further, there are no systemized inventory activity analyses. Thus, inventory levels are not being minimized; obsolete stock items are not identified; high-cost materials have no identification to aid in increasing turnover; and existing inventory control programs are archaic.

Aggressive efforts have not been directed toward increasing item volume through joint purchasing to improve prices or discount levels. In addition, the lack of a uniform commodity code has reduced the opportunity for joint buying and minimized the inter-university exchange of purchasing information.

Recommendations for improvement

In reviewing the purchasing organizations of the various state-supported universities, it was apparent that many of the same opportunities for improvement existed at each. The following recommendations provide guidance in identifying these conditions and suggest remedial actions. Their implementation should improve purchasing services and lower costs.

1. *Restructure purchasing department organizations consistent with materials management principles.*

At present, receiving, shipping, and inventory control functions are occasionally located in organizations not related to purchasing. This reduces overall control, coordination of functions, and operational efficiency. Nonrelated responsibilities often assigned to purchasing organizations further dilute their effectiveness.

Moreover, substantial independent purchasing activities are conducted by user departments without professional purchasing guidance or control. The physical plant activity has assumed much of the purchasing responsibility at more than one university. Almost universally the purchase of library books and periodicals did not benefit from the assistance of professional purchasing expertise. Frequently, requisitioners of multisource materials specify vendors, thereby eliminating the possibility of price reductions or quality improvements which could have been achieved by purchasing search activities.

The materials management concept requires that all functions directly related to procurement, control, and disbursement of materials, supplies, and commodities be centralized in one organization. Specifically, this concept centralizes purchasing, inventory control, warehousing, and shipping and receiving under a director of materials management. Effective materials management requires coordination and control by a full-time director, so unrelated functions should be reassigned.

Separate purchasing functions should be maintained for the bookstore, library, and food service operations because their requirements are quite specialized. However, purchasing policies and professional guidance must be provided these functions by the materials management organization. The participation of all other university departments should be limited to submitting purchase requests specifying the items and quantities desired. It may be necessary, in certain cases, to specify suppliers, but these should be interpreted as additional specifications and not prevent the use of equivalents.

A totally integrated materials management function can maximize economies through coordination of the purchasing, receiving, storage, distribution, and inventory control activities and provide a more sensitive and effective response to the needs of each university.

2. *Develop information systems necessary for improved management of purchasing activities.*

At present, management evaluation of the purchasing activity is difficult because of the lack of comprehensive information. Most purchasing organizations do not compile data critical to the control and management of their activities. Without the requisite data, effective negotiations with vendors are difficult, advance planning and analysis of market trends is impossible, and the ability to evaluate overall effectiveness is reduced.

A statistical program common to all universities should be developed to provide basic quantitative information on all factors significant to the purchasing activity. Such data should be used by each purchasing department head to evaluate and plan the purchasing operations of his university. Relevant data would include the following:

- Vendor performance history
- High-dollar, high-volume item identification
- Seasonal price analyses
- Standard specifications
- Inventory turnover analyses
- Purchase order processing costs
- Volume of small orders

Although this list is not all-inclusive, it illustrates a significant information void. This type of support data should be collected and available if operational effectiveness is to be improved. Certain of these data should be circulated among universities to increase the volume of common item orders. This will improve discounts, minimize inventories, and provide broad performance data on major vendors.

Although the recommended information system would be greatly assisted by computers, the data are basic to effective management of purchasing and should be developed manually if necessary.

3. Institute improved inventory control programs.

The combined state university inventory of central stores material and food items exceeds $3-million. Inventory control programs could minimize this investment.

Most universities employ simple manual bin-level monitoring with arbitrarily established minimum-maximum stock levels. Reordering is a manual process; loss of stock due to obsolescence is not minimized; and control procedures for maximizing inventory turnover have not been developed. Systems of inventory control used by most universities tend to treat each item with the same level of attention. There is neither identification of high-cost and high-volume items nor concentration of control efforts in areas representing greatest cost.

Inventories can be monitored through the use of ABC control procedures, which identify all items by extending annual usage times cost, sequenced in a descending order of magnitude. It then becomes apparent that approximately 20% of the items in the inventory make up about 80% of the investment. These are considered Class A items, and special care should be used to plan the stock levels and maintain the accuracy of the perpetual inventory records of these items.

The next 50% of the items make up approximately 10% to 15% of the inventory cost. These Class B items have average importance and receive the normal amount of attention.

The remaining 30% of the items make up the balance, or 10% of the cost. These small-dollar units are comparatively unimportant Class C items. They should be purchased only once a year and maintained by simple bin-level control. The high-volume, high-dollar items may be turned 10 to 12 times a year. In this way, control is concentrated on the small number of items which represent the bulk of inventory value.

All inventory control elements including economic order quantity procedures, minimum-maximum stocking quantities, handling frequency, space utilization, and total flow-through costs of inventory merchandise should be reviewed to determine the improvements which could increase operational efficiency and reduce costs. Adoption of the ABC inventory concept will increase inventory turnover and result in estimated annual savings of 5% of the total inventory value, or $150,000.

4. Develop procedures to reduce processing costs of low-dollar purchase orders.

As shown in the table on the next page, orders of less than $100 each accounted for 30% to 62% of the purchase requisitions prepared and processed by university purchasing departments during fiscal 1968. This represents about 5% to 10% of the total expenditures of $56.7-million and incurs an average administrative cost of $15 per purchase order.

In addition to legal requirements, management control of purchasing is the primary reason for elaborate ordering, receiving, and accounting systems. As order dollar size decreases, however, the importance of applying the same control criteria to all orders also decreases. When control costs approach the value of the purchase, it is unwise to maintain any but occasional audit-type control. It is suggested the following small-order controls be used on an expanded basis.

UNIVERSITY CENTRAL PURCHASING STAFF AND ORDERS — FISCAL 1968

UNIVERSITY	TOTAL STAFF	NUMBER OF ORDERS	PERCENT OF ORDERS UNDER $100
Akron	12	8,500	50
Bowling Green	8	5,000	30
Central	3	3,700	53
Cincinnati	13	26,200	60
Cleveland	8	11,000	40
Kent	9	16,000	62
Miami	5	15,300	24
Ohio State	36	43,600	52
Ohio	15	17,500	60
Toledo	4	5,900	35
Wright	5	2,300	34
Youngstown	6		
Total	124	155,000	

Maximum control and price advantage can be gained through the use of blanket-term orders. This procedure involves issuance of an order based on specified price, quantity, and quality, but delivery is usually on a demand or hold-for-release basis. New procedures which reduce processing costs by consolidating releases and simplifying receiving and distribution requirements will result in proper purchasing control.

Effective controls for miscellaneous purchases which fit the same accounting commodity designation are the blanket and John Doe orders. These two procedures apply to multiple small-order purchases against a specified maximum amount. For example, the order may be for mixed hardware with a maximum of $1,000, of which each purchase cannot exceed $25. If the order is placed with a specified vendor, it is a blanket requisition. When open to multiple vendors, it is referred to as a John Doe.

Single orders between $25 and $100 should be processed by using a handwritten short-form purchase order. In this simplified procedure, the purchasing department retains control, but the complex sequence of events surrounding the regular purchase order is eliminated. These orders are limited to locally acquired items, normally on a "will call" and "pick up" basis by the user, thus removing all receiving and handling functions. Upon receipt of the user's requisition, the purchasing department calls the vendor to place the order and fills out the short form. Purchasing retains one copy, and two others are used in picking up the material. Payment is based on the vendor's invoice (normally a monthly consolidation of sales), which is matched to a signed copy of the short form indicating receipt of goods. Although control is minimal, it does provide the opportunity for monitoring purchases of stores items outside of the system. This type of order is equally effective for accommodating emergency purchases.

Only minimum control is warranted for orders below $25. When a purchase order costs approximately $15 to process, it becomes imperative that no requisitions for under $25 be issued. Control in this area is relatively unnecessary, although occasional checks of the voucher records are deemed advisable. Most orders under $25 should be handled as petty cash.

Although small orders will never be eliminated, improved management practices and expanded use of existing purchasing procedures can dramatically reduce their number. The recommended improvements, if implemented, would conservatively achieve annual savings of $100,000. Additional benefits would include improved reaction time to purchase requests and more effective utilization of professional staff members.

5. Provide libraries with purchasing assistance.

Libraries traditionally are responsible for their own purchasing functions. In most instances, however, this responsibility is assigned to professional librarians who are untrained in procurement. In fact, most of the $4-million expended in fiscal 1968 for books and periodicals was made without the benefit of competitive bidding. Purchasing departments should therefore lend their expertise to the libraries to ensure that maximum purchasing power is realized from book and periodical budgets. An employee from the purchasing department, physically stationed in the library, could institute competitive bidding on large blocks of books, devise and implement more economical methods of ordering and receiving, and establish effective joint purchasing programs with other university libraries.

6. Allow universities to again use state contracts.

In the past, universities could use state contracts whenever beneficial. The privilege was sometimes abused when state contracts were used as a lever to negotiate a better price with another vendor. This was unfair to the successful state bidder. Also, some groups were using these contracts without state permission.

The State Purchasing Office attempted to control the use of these contracts by requiring the universities to send in orders for placement. The universities resented this because it added to the purchase cycle and reduced their flexibility. Furthermore, there was a legal question concerning the ability of the university to use these contracts. For these reasons, the use of state contracts by the universities was discontinued.

Many state contracts would be beneficial to the universities because they are negotiated on much larger volumes than an individual institution can command. Conversely, if universities use these contracts, their additional volume should bring lower prices to the state.

It is recommended each university make a commitment relative to the state contracts it wishes to use each year. This should protect the successful bidder. If a legal question still exists, new legislation should be passed to enable all public schools, including primary and secondary schools, to use these contracts.

If a school or university uses a state contract, it is further recommended they be required to send a copy of each order to the State Purchasing Office. This will facilitate keeping volume records as background for later bid periods. The State Purchasing Office can also have the successful bidders send copies of all invoices, thus providing an accurate record of contract use.

It has been estimated that 20% of the $56-million expended for university central purchases could be procured at improved prices through a joint buying combine. The savings in reduced prices and lower administrative costs are conservatively estimated to be $1.1-million per year.

7. *Reevaluate current competitive bidding practices.*

Ohio law requires written bids for purchases exceeding $2,000. However, as shown below, a common practice at many universities is to bid all items over $500. At two universities, the minimum limit for formal bidding is as low as $300. This results in obtaining written bids for approximately 85,000 orders each year. Furthermore, three bids are normally requested. This increases annual transactions to 250,000 and enlarges clerical work loads accordingly.

PURCHASE LEVELS REQUIRING FORMAL BIDS

Akron	$ 500
Bowling Green	500
Central	100
Cincinnati	300
Cleveland	500
Kent	1,000
Miami	300
Ohio State	500
Ohio	500
Toledo	500
Wright	500
Youngstown	1,900

The use of competitive bids should be limited to items costing $2,000 or more, as provided in Ohio statutes. All other orders should be shopped by telephone on a "quote" basis. Verbal quotations from one or more vendors will enable purchasing organizations to retain sufficient control. Through implementation of this recommendation, clerical work required to prepare bid requests would be reduced by an estimated one-third for annual savings of $75,000.

8. *Strengthen the Inter-University Council Purchasing Committee of Ohio.*

This committee was established in 1963 to achieve the following objectives:

- Pool purchasing power through the development of joint contracts and common specifications.
- Improve purchasing procedures at each of the state universities.

The committee, which meets monthly, is composed of the chief purchasing officers of each state university, and chairmanship is on a rotating basis. Although improved relations between participating purchasing groups have resulted from committee meetings, agreement on common specification has been infrequent, purchasing procedures have not been improved, and relatively few inter-university price agreements have been adopted. As of May 1969, only the following 22 items had been resolved into price agreements:

- Air conditioners
- Automotive vehicles
- Calendar pads and bases
- Draperies
- Electronic parts and supplies
- Electronic tubes, standard and industrial
- Film, Polaroid
- Furniture, steel office
- Index cards
- Lamps, fluorescent and incandescent
- Library catalog cards
- Magnetic computer tapes
- Manila folders
- Mattresses
- Photographic film, paper and chemicals, and Carousel projectors
- Salt for ice removal and water softening
- Rust-Oleum paint products
- Spirit masters
- Standard stock forms
- Tabulating cards
- Polyethylene typewriter ribbon and solvent-base carbon paper
- Videotape

As shown below, university usage of these price agreements during fiscal 1968 averaged 0.58%, or less than 1.0% of the total purchasing expenditures.

INTER-UNIVERSITY COUNCIL PURCHASING

University	*Percent of Total Purchases*	*Volume*
Akron	0.19	$ 9,400
Bowling Green	0.52	26,000
Central	1.18	12,400
Cincinnati	0.29	27,000
Cleveland	0.28	8,400
Kent	0.50	41,000
Miami	1.21	47,400
Ohio State	0.50	140,000
Ohio	0.78	74,000
Toledo	0.90	21,200
Wright	2.58	39,000
Youngstown	0.52	15,000
	Average 0.58	Total $460,800

The table shown below, "Comparison of State-Wide Office Supply Prices," provides a brief price comparison of certain items as purchased by each university. One reason for the wide price ranges is the difference in quantities used. Ability to standardize specifications and pool volumes should result in attainment of inter-university agreements beneficial to all universities.

With few exceptions, individual universities are realizing a price disadvantage as high as 169% for the items compared. Since office supplies of this type account for approximately 4% of the universities' total volume, it is not unreasonable to assume that additional savings are possible. Greater application of inter-university price agreements for office supply commodities alone should enable annual savings of $225,000.

Moreover, an exchange of information among the members of the Inter-University Council, the State Purchasing Department, and the State Department of Education could lead to further purchasing economies. The latter agency is in the initial stages of helping the state's primary and secondary schools consolidate their purchasing volume.

9. *Institute the use of a purchasing calendar.*

A major problem in many university purchasing departments is the inability to combine orders effectively to achieve maximum volume and price discounts. Coordinating requisitions for similar items from various departments and combining them into pooled orders is desirable and can be facilitated through use of a purchasing calendar.

This calendar would set deadlines for ordering various university supply requirements. The timing and frequency of such deadlines would be determined by the purchasing department after consideration of the following:

- Vendors' offerings of volume discounts
- Need and availability of storage facilities
- Seasonal price variations
- Desirability of keeping university dollar volume purchases at nearly equal monthly levels

The use of this calendar would ensure that the maximum number of orders for like items are pooled to obtain the best possible price. Savings on small purchases would come not only from volume discounts but also from a reduced number of purchase orders, each of which costs an estimated $15 to prepare and process. Clerical costs, through the use of this recommended purchasing calendar, could be reduced by an estimated $20,000 annually.

COMPARISON OF STATE-WIDE OFFICE SUPPLY PRICES

UNIVERSITY	ENVELOPES #1, WHITE WOVE, SUB. 10#, PER M	SPIRIT MASTER, LONG RUN, PER BOX	LEGAL PADS, RULED, 8½ x 14, PER DOZ.	INDEX CARDS, WHITE, 3 x 5, PER M	INDEX CARDS PLAIN OR RULED, 4 x 6, PER 100	INDEX CARDS, PLAIN OR RULED, 5 x 8, PER 100	DUPLICATING FLUID, PER GALLON
Akron		3.60	2.04	1.10		.29	1.10
Bowling Green	3.80	1.95*	1.57*	.78	.134	.21*	1.02
Central	3.46	2.11	2.76**	.90	.14	.21*	1.07
Cincinnati	3.90	1.95*	1.68	.80	.14	.21*	.96*
Cleveland		4.24**	1.85	.72*		.21*	2.58**
Kent	4.45						1.25
Miami	3.94	1.95*	1.83	.84	.14		1.23
Ohio State	3.19*	1.95*	2.47	.72*	.13*	.21*	.96*
Ohio	3.76	1.95*	1.75	1.80**	.28**	.45**	1.27
Toledo	4.96**	2.75	2.40	1.20	.20	.33	1.50
Wright	4.05	3.00	1.68	.85	.13*	.23	.96*
Youngstown		2.39	1.72	1.34		.31	1.30
Difference between Minimum and Maximum Prices	55%	47%	76%	150%	116%	114%	169%

* Minimum price
** Maximum price

10. Develop a standard commodity code for inter-university purchasing.

Except for those inter-university price agreements now in effect, there is no standard coding system for cross-analysis and identification of purchase items common to all Ohio colleges and universities. Establishing a standard commodity code will promote inter-university cooperation and coordination. It would also provide increased uniformity and make direct comparisons between purchasing departments more accurate and meaningful. A standard code would also serve as the keystone for simplifying the process of converting invoice and order information into data-processing language for the comparison programs previously outlined as well as budget encumbering purposes. The rapid assembling of purchasing information is essential to an effective purchasing operation.

This code should include all items which could possibly be purchased through state contracts or jointly by the universities, such as:

- Office and instructional supplies
- Art supplies
- Custodial supplies and equipment
- Maintenance supplies and equipment
- Automotive supplies and equipment
- Fuel and other operating supplies
- Dormitory furniture and furnishings
- Classroom furniture
- Office equipment
- Library supplies

These are but a few examples. The code should include all items to analyze their potential for joint purchasing and to aid in vendor performance evaluation.

11. Investigate the practicality of proposing legislation exempting state universities from fair trade laws.

Currently, 13 states have no fair trade laws, or such laws have been declared unconstitutional and repealed. Four states have specific statutory exemptions, and three others have published Attorney General opinions exempting their agencies, subdivisions, municipalities, libraries, colleges, universities, and so forth. Fair trade pricing does not apply to these exemptions.

According to the Ohio Revised Code pertaining to the Fair Trade Act, the purposes of this legislation are:

> " . . . generally to protect and preserve small business, to safeguard the good will of trademarks and trade names, to further wholesome competition, to prevent monopoly in the distribution of goods, and to promote the public welfare by securing wider distribution of commodities and an increase in the production thereof, and thereby reducing production and distribution costs, protecting and increasing gainful employment in manufacturing, wholesaling and retailing, all for the benefit of the consumer and the well-being of the cities of the state."

However, under the protection of this act, manufacturers franchise laboratory and scientific equipment for distribution at prices marked up 30% to 100%.

Many dealers would prefer competitive discounting opportunities. In fact, they frequently propose complex and ethically questionable transactions which are, in effect, camouflaged discounts. A university cannot enter into such an agreement without compromising a degree of operational flexibility and control.

During fiscal 1968, the state-supported universities of Ohio purchased $3.15-million of franchised scientific and laboratory equipment at prices protected under the Fair Trade Act. A conservative discount of 20% could be anticipated and would result in annual savings of $630,000. Therefore, a legislative study should be made to consider excluding Ohio's public system of higher education from the Fair Trade Act.

12. Investigate the possibility of expanding joint purchasing arrangements between nearby universities, cities, school districts, and governmental agencies.

Some university purchasing organizations have made important strides toward greater vendor discounts through cooperative procurement efforts with other nearby public institutions. For example, the University of Cincinnati has established 45 joint purchasing agreements totaling $631,000 with the City of Cincinnati, Hamilton County, and the Cincinnati Board of Education. Although substantial savings result from these efforts, such pooling has been relatively small in relation to the universities' total dollar volume of purchases.

Therefore, each university should initiate a major attempt toward further pooling of common material purchases with contiguous governmental agencies to attain greater purchasing economies on a mutually advantageous basis. Such explorations should be most beneficial relative to motor vehicle requirements, maintenance supplies, and standard office materials. Although it is difficult to estimate the potential savings, it can be assumed they would be substantial.

Library

THE PRIMARY objective of a university library is to support the academic programs of the institution. This responsibility includes the selection, acquisition, preparation, and care of library materials—books, journals, pamphlets, maps, microtext, films, and records—used to conduct instructional and research activities. The library must also provide public services to its users to encourage scholarship and maximize utilization of all its resources. In order to accomplish this objective, the library must participate in academic planning and maintain an organization which can effectively meet the challenges of increased student enrollment, expanding postgraduate programs, and branch development.

A typical library organization is headed by a director who reports to the chief academic officer of the university. Assisting the director are several department heads, usually professional librarians, who are responsible for certain library functions. Such activities include: acquisitions, cataloging, serial subscriptions, shipping and receiving, bindery preparation, circulation control, archives, documents and reference material, special collections, library and bibliographical research, coordination with departmental and branch libraries, and inter-library loan and cooperative programs.

Some larger libraries in the Ohio system of public higher education have consolidated the technical support operations (acquisitions, cataloging, serials) of the library under the responsibility of an associate director. The remaining user-related services are then delegated to another associate director. In addition, most universities utilize a student-faculty library committee to advise the director on services and policies.

The importance of effective management of state-supported university libraries is evident from a review of some basic statistics. Ohio's libraries are staffed by almost 900 full-time employees. Many man-hours are contributed by students and other part-time assistants. Total operating expenditures for the 12 university libraries studied approached $12-million during fiscal 1968. Expenditures for books and other library materials amounted to almost $4.9-million. The combined library collection exceeds 7-million volumes. A summary of statistics for each university is provided in the table shown below.

The procurement of library material represents a significant portion of the operating cost, that is, over 36%. In addition, staffs concerned with acquisitions and the other technical service functions of cataloging, bindery preparation, and shipping and receiving consume 30% to 40% of most library payrolls. Thus, approximately 60% of library expenditures can be directly attributed to technical services.

Acquisition procedures vary considerably among Ohio university libraries. Librarians utilize many different sources of book material, and the discounts received vary accordingly. Some staffs select all materials for the library, while others may simply process faculty and graduate student requests obtained from supplier catalogs. Several libraries retain commercial firms to provide continuous selection, ordering, and precataloging services. Departmental book budgets are maintained by a few libraries in an effort to provide a balanced collection.

Cataloging staffs classify and assign subject headings to library acquisitions. In addition, several libraries are also reclassifying their holdings from the Dewey Decimal System to the Library of Congress System. The cataloging function generally employs the most people in each library, although relative staff sizes,

LIBRARY STATISTICS FOR OHIO UNIVERSITIES

UNIVERSITY	1967/68 OPERATING EXPENDITURES	1967/68 EXPENDITURES PER FULL-TIME EQUIVALENT	1967/68 COLLECTION	1968/69 COLLECTION ADDITIONS	1968/69 COLLECTION	1968/69 OPERATING BUDGET	1968/69 BOOK AND LIBRARY MATERIAL BUDGET	1968/69 LIBRARY STAFF
Akron	$ 494,664	$ 49	225,000	17,000	242,000	$ 685,000	$ 290,000	48
Bowling Green	915,575	70	616,500	30,000	646,000	1,008,000	222,000	63
Central	161,225	60	92,300	4,700	97,000	180,000	70,000	29
Cincinnati	1,047,793	51	1,037,000	38,000	1,075,000	1,148,000	400,000	98
Cleveland	777,552	117	116,000	35,000	151,000	785,000	270,000	46
Kent	1,871,755	87	540,000	98,000	638,000	1,777,000	832,000	117
Miami	942,714	66	495,000	30,000	525,000	1,060,000	370,000	60
Ohio State	3,208,609	74	2,200,000	120,000	2,320,000	4,038,000	1,522,000	220
Ohio	1,205,243	60	430,000	22,000	455,000	1,375,000	348,000	112
Toledo	572,809	57	607,000	49,000	656,000	590,000	182,000	43
Wright	451,158	113	129,000	14,000	143,000	416,000	160,000	39
Youngstown	319,006	29	175,000	10,000	185,000	423,000	200,000	17
Total	$11,968,103		6,662,800	467,000	7,133,000	$13,485,000	$4,866,000	892

methods, procedures, and degrees of sophistication differ appreciably throughout the system.

Physical facilities of Ohio university libraries range from large, modern, air-conditioned, high-rise structures to outdated, overcrowded buildings. The latter condition usually leads to fragmentation of the collection into many small departmental libraries and reading rooms. Due to increasing enrollments, expanding graduate programs, and the resultant growth of library collections, most libraries have recently completed or are now planning facility additions. In either case, these trends will perpetuate the requests for new library construction.

Appraisal of current operations

Ohio university library resources have been greatly expanded in a major effort to meet nationally accepted research standards. Development of graduate programs and the growth of branch campus libraries has resulted in ambitious acquisition plans for the coming years. However, this rapid growth has resulted in considerable inefficiency in general procedures and technical operations and has created a critical void in the coordination and planning of library resources.

A large share of total library expenditures is directly attributable to technical service functions. Processing procedures have received negligible systems analysis, and integration with data processing applications appears years away. As a result, technical service costs are excessive.

Procedures employed in the acquisition of books vary considerably among the universities. Acquisition data and management information are not collected or analyzed to allow the application of professional purchasing practices. Delivery service receives priority, and price negotiations are seldom conducted. Furthermore, the lack of faculty participation and the absence of long-range academic planning have inhibited the development of academically compatible collections. This cycle then repeats itself and results in poorly planned expansions of collections and facilities.

Library administration is decentralized, and intra- and inter-university library coordination is not well developed. Consequently, the potential economies of pooled buying and joint services are not being realized at the campus, regional, or state level. Although some cooperative efforts are being made through the Inter-University Council of Library Directors and the Inter-University Library Loan Service, coordination could be greatly improved.

The universities are participating in the newly formed Ohio College Library Center, which is addressing the state-wide system needs of universities in a comprehensive manner. The university libraries should continue to support the center enthusiastically. However, since development has been slow, the universities cannot afford to wait for completion.

Recommendations for improvement

The following recommendations are presented to increase the effectiveness of Ohio's university libraries. Unless noted, these recommendations are applicable to each university library. They portray an accurate picture of the problems and weaknesses of the state-supported university libraries in Ohio. Their implementation will assist in meeting the many challenges and future demands placed on library resources.

1. *Conduct a systems and methods analysis of library technical service procedures.*

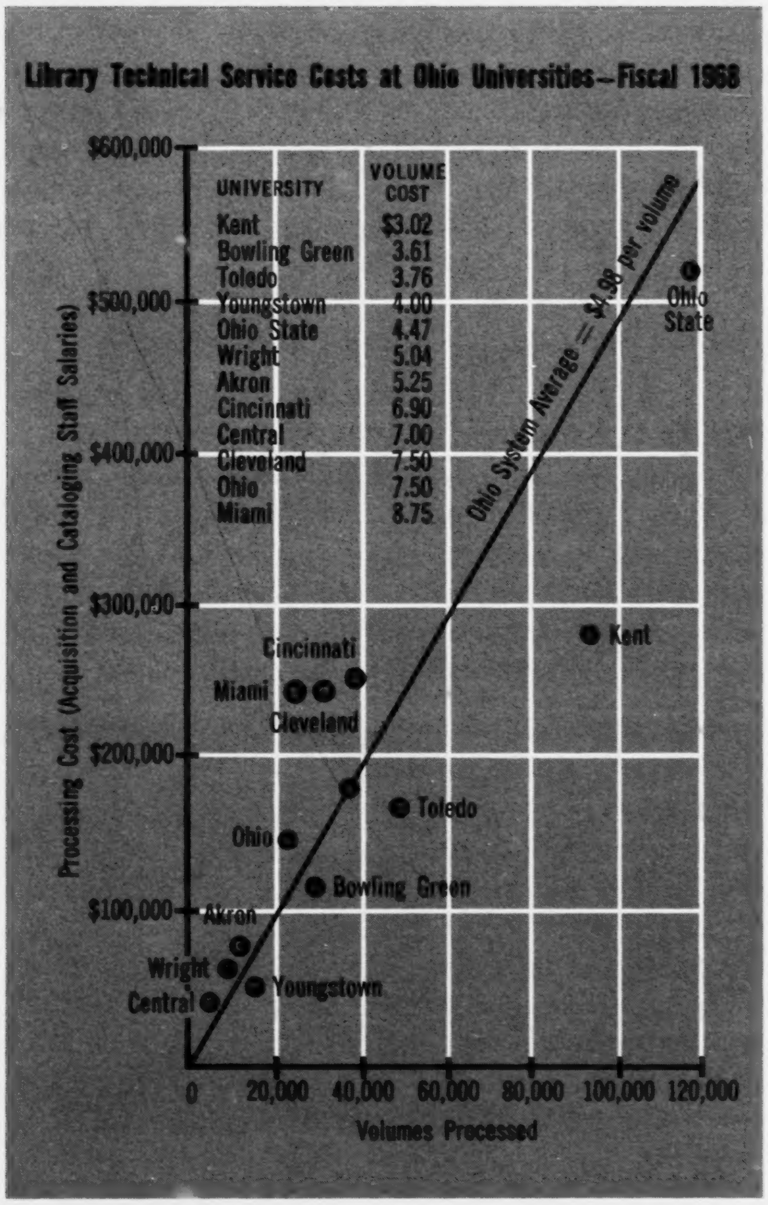
A complete systems study should be conducted to analyze the methods used and to reduce costs incurred in acquiring and cataloging books. The effectiveness of the technical service function can be evaluated by comparing the processing costs of individual libraries. A graphical representation of Ohio university library technical service costs during fiscal 1968 is shown on the next page. These costs include only the salaries and wages of the acquisition and cataloging staffs.

Volumes processed in individual libraries ranged from a low of 4,700 volumes to a high of almost 120,000 volumes at costs from $3.02 to $8.75 per volume. The average processing cost was $4.98 per volume. As shown by the graph, large quantities of volumes were not processed any more economically than small quantities. In addition, processing costs varied between libraries of similar size and holdings.

Factors contributing to high operational costs include functionally unsuitable departmental layouts, unnecessary accounting procedures, manual methods of operation, and absence of systems for measuring productivity and controlling costs. The age and design of many libraries also present a challenge to effective operation, particularly during this period of dynamic growth.

However, until new facilities become available, optimum utilization of existing libraries can be obtained through an overall systems and methods study. This study should include:

- A functional layout for each library.
- An analysis of work flow between departments.



Library Technical Service Costs at Ohio Universities—Fiscal 1968

UNIVERSITY	VOLUME COST
Kent	$3.02
Bowling Green	3.61
Toledo	3.76
Youngstown	4.00
Ohio State	4.47
Wright	5.04
Akron	5.25
Cincinnati	6.90
Central	7.00
Cleveland	7.50
Ohio	7.50
Miami	8.75

- A detailed cost analysis of all departments.
- The determination of work standards to assist in management planning and control.
- A complete plan for the development and application of computers to library operations. This plan should identify the systems which should be developed as well as quantify the anticipated benefits.

All necessary resources for such a study now exist within the university system. Thus, it could be conducted without cost to the libraries. Industrial engineering and library science talent, both student and faculty, should be obtained from graduate schools specializing in these disciplines. Cooperative completion of such a study would bring substantial benefits to all libraries, the participating schools of engineering and library science, and the universities.

It is anticipated that university libraries will acquire and process over 500,000 volumes during 1969/70. Application of improved methods and procedures should reduce the processing cost by a minimum of 10%, or about $0.50 per volume, for annual state-wide savings of $250,000.

2. *Establish regularly scheduled performance reports.*

To support the development and accumulation of data required for a comprehensive systems and methods study, library operating managers should prepare performance reports on a monthly basis. Such reports should include monthly productivity data and an analysis of activity strengths and weaknesses. Information of value to library management would cover:

- Volumes ordered—by category, quantity, cost, and discount
- Volumes cataloged or reclassified
- Book request and cataloging backlog
- Processing cost per volume
- Circulation statistics
- Personnel summary—attendance, student hours, and the like

Furthermore, operating managers should be provided timely budgetary information and assigned cost responsibility for their areas of operation. Such reports would enable better interim management of library activities and improve the effectiveness of present operations.

3. *Institute competitive bidding for all types of books used in the university libraries.*

Ohio university libraries expended about $4-million for books and periodicals in 1968/69. With the exception of 21% of Ohio State University's acquisitions, these expenditures were made without the use of competitive bidding.

Each market supplying books for purchase by libraries offers discounts compatible with its individual operations and costs. The well-informed librarian must be aware of the factors in the book trade which can affect the final price of books.

One means of obtaining books is directly from a publisher: general trade publishers, specialized publishers, and university presses. Another means of purchasing is through a wholesaler, or jobber. A wholesaler is a dealer who buys new books in large quantities from multiple sources, accumulating a representative stock, and giving libraries an opportunity to acquire the books of many publishers at a discount with a single order form, invoice, and payment.

Regardless of the source of the material, discounts depend upon the quantity and the type of book ordered. Publishers give maximum discounts to trade books only.

A trade book is usually a nontechnical book published in large numbers for sale to the general public. Textbooks, technical books, and subscription books are considered nontrade items because of their specialized nature and limited appeal. Since they are published in limited editions and the cost of publishing is comparatively high, they are given minimum discount.

In order to obtain maximum discounts, the libraries should offer large blocks of these consolidated book purchase requirements for competitive bids. This also requires that a better recordkeeping system be implemented because current files do not facilitate accurate and routine maintenance of acquisitions data. Although the precise dollar volume for individual book categories within a block cannot be predicted, overall dollar volume could be estimated fairly accurately once a good record system and breakdown of the library budget have been attained. Thus, a blanket percentage discount might be offered by reliable jobbers.

With the need for increased acquisitions in the future, prospective vendors will be able to provide increasingly larger discounts proportionate to the libraries' block purchases. However, based on current orders, it is conservatively estimated that an additional 10% discount could be realized through competitive bidding techniques. This means an estimated $400,000 would be saved annually.

4. *Assign a professional purchasing agent to all university libraries.*

The services of professional librarians should be reserved for such tasks as book selection and other appropriate functions. As library specialists, they should be free of book purchasing duties to devote their talents to those areas which strengthen and reinforce the library's prime objectives. The need for assigning a professional purchasing agent to the library is indicated on the basis of 1968/69 library purchases of almost $4-million which were not subject to bids.

To attract lower bids and secure greater discounts, the library should institute competitive bidding through a professional purchasing agent. This individual should work with the library, but administratively should report to the university's director of purchasing. Under this approach, library acquisitions would be procured by accepted purchasing techniques. It would assure that book price and delivery service are the main criteria for awarding contracts to vendors. Also, it would provide time for the order librarians to catch up with "want list" backlogs, implement a better recordkeeping system, and devote more attention to book selection.

5. *Provide the library with a more active role in university-wide academic planning.*

The library plays a substantive role in enabling academic programs to meet national accreditation standards. This is especially true in planning for new postgraduate and doctoral support requirements. In addition, large capital investments are required on a continuing basis to implement these programs and plans. Yet the head librarians at very few institutions were so involved or familiar with academic plans that they could knowledgeably plan additions to the collections.

Therefore, the director of the library should be an active participant in the planning groups closely related to library support programs. These include academic, faculty, graduate, and other college councils. This will help assure that the library's growth is compatible with changing academic requirements.

6. *Provide additional analysis and planning support for collection and facility expansion for all Ohio university libraries.*

University libraries in Ohio are expanding their collections at an average annual rate of 39,000 volumes each. In many instances, the acquisitions librarian is selecting and ordering books without faculty involvement and, at a few universities, without benefit of an academic plan. The need for an academic plan is, of course, absolute and is covered in the Planning section of this report.

Once an academic plan has been established, the librarian must translate this plan into library acquisitions which support the university's present curricular offerings and strengthen those disciplines which may have been neglected in the past. Library acquisition budgets established for each academic department are the most effective way of providing compatible growth of library holdings.

Initial departmental allocations should be recommended by university library committees. However, final book budget distribution should remain a decision of the head of acquisitions in concert with the director of the libraries. Such distribution should be based on available funds and an evaluation of overall library needs relative to academic plans.

Once an academic departmental book budget has been fully allotted and approved, the data should be immediately communicated to the various academic departments. Book expenditures and encumbrances for control purposes should be the assigned responsibility of the accounting department of each university.

Many universities are planning or are already committed to library facilities expansion. In most cases, expansion is necessary because collections have simply outgrown existing facilities. This is due, in part, to the lack of planning and selectivity used in the development of the collections. Furthermore, many new facilities are being constructed without the benefit of long-range academic plans. Little consideration has been given to building designs which are compatible with future data processing applications. In fact, many features which fragment related library departments in outmoded buildings have been incorporated into the new building designs.

Therefore, approval of future library expansions should be based on a more structured approach to short- and long-range planning in order to provide the detail and alternatives consistent with the magnitude of operations and capital involved.

7. *Coordinate the administration of the central, branch, and university school libraries; then consolidate departmental collections.*

A current trend among the major university libraries in Ohio is to divide the collections and decentralize the administration and operation among the main, departmental, branch, and university school libraries. Commonly, the directors of libraries have overall responsibility for the main library and various departmental libraries scattered about the campus. They act in an advisory capacity to the branch campus head librarians who generally report to their branch director. Often, university school libraries such as law, medicine, and English are completely autonomous.

Furthermore, as departments expand their programs and acquire their own facilities, plans are usually formulated to provide independent library collections and services. For example, Ohio State University operates 25 separate departmental libraries. At the University of Cincinnati, the responsibility for 18 libraries is divided among 8 administrators. Furthermore, the 12 major state universities have now established 18 branch libraries, most of which operate with minimum support from the main campus libraries.

Such proliferation of book collections is very expensive to maintain and works a hardship on the student who is taking work in multiple fields. The trend toward departmental libraries, office collections, and reading rooms scattered over the campus weakens the development of the library resources. In addition, these trends result in the growth of unnecessary library staffs and technical services as well as a duplication of collections.

Therefore, all library resources at each university should be the responsibility of the director of libraries. The director should oversee the development of all university and branch libraries and be responsible for their operation. His staff should work with the personnel of each library to develop programs of common technical and public services. Benefits would be:

- Reduction of professional librarians and supporting staff required at each library
- Elimination of duplicate technical processing
- Higher discounts through combined purchasing
- Reduction of duplicate titles required
- Development of a common card catalog for all libraries within the university.

Furthermore, departmental libraries containing common or similar subject matter should be consolidated into fewer but larger collections according to disciplines, i.e., arts, science, business, and the like. Consolidation of departmental collections offers several advantages:

- Utilization of a single circulation service
- Availability of professional bibliographic and reference librarians
- Longer and more convenient hours of operation

Any exceptions to the concept of centralized collections should be limited to reading rooms supplying primarily recent journals and duplicates of titles maintained in the main library.

The savings available through centralization and consolidation of library activities will vary on each campus according to the degree of decentralization. On a state-wide basis, however, improved staff utilization and the coordination of technical services by each university could result in savings of $670,000 annually.

8. *Formulate plans for the development of regional library consortiums for Ohio universities.*

The economies of centralized technical services and pooled book acquisitions at each university have received considerable emphasis earlier in this section. However, substantially greater savings are available through joint cooperation on a regional and state-wide basis. Large blocks of the various categories of books which together make up an annual book budget of $4-million would certainly command the maximum discounts available. Massive savings would also be available through a standardized book ordering and cataloging service.

The existence of these potential savings has led to the development of cooperative agreements between groups of regional institutions of higher learning throughout the nation. Known as consortiums, these groups are dedicated to the following purposes:

- Provide, through cooperative acquisition, materials beyond the reach of individual component libraries.
- Achieve economies in the use of resources, both human and material.
- Reduce needless duplication of resources, especially of expensive and little-used materials.
- Facilitate sharing of materials among members of the group.

The Dayton-Miami Valley Consortium has estimated that the cooperative book cataloging and processing center among its members has reduced the cost of processing a single volume to $1.20. In addition, they cite book acquisition savings up to 25% for some universities. Obviously, a consortium can significantly reduce processing costs which now average $4.98 per volume.

Plans should be formulated to establish three regional library consortiums for Ohio universities. These consortiums would serve the three major areas of academic development: the northern, central, and southern regions of the state. Their implementation would be in conjunction with the proposed data processing centers, as recommended in the Systems and Data Processing section of this report.

The combined resources of regional library consortiums and data processing centers will provide the essential requirements for the development of systematized acquisition procedures, bibliographical work, cataloging, and central circulation control. In addition, a comprehensive book duplication avoidance program could be developed to reduce the collection of expensive and little-used material. The savings produced through this program could be allotted to the development of information retrieval systems which would then provide accessibility of rare, expensive, or little-used material to all regional patrons.

The development of consortiums would require determination of the academic-economic value of maintaining certain categories of materials in each library or possibly in a central repository on microform. Repositories utilizing microforms, which can accommodate a 20,000-volume collection on a desk top at one-sixth the cost of the original bound collection, are one alternative to the continuous growth of new library physical facilities.

Although establishment of regional consortiums would be costly, it is estimated this recommendation offers an opportunity to realize net savings of $1.2-million per year through additional book discounts and reductions in staff. In addition, it is estimated there is an opportunity for saving a minimum of 10%, or $5-million, in deferred construction costs.

Plant Operation and Maintenance

AT THE END of fiscal 1968, the State of Ohio had invested $892-million in the physical plants of its 12 universities. This total included $45.7-million in land, $182-million in movable equipment, construction in progress valued at $122-million, and $525-million in buildings providing 32.4-million square feet of gross floor space. Overall responsibility for operating and maintaining buildings, equipment, and grounds is vested in the physical plant departments at each institution. These organizations have an important mission since the service life of each university's physical structure and the condition of its grounds depend not only upon the original construction materials but also on the quality of the maintenance and custodial programs.

A typical physical plant department is headed by a director who reports to a senior administrator within the university's office of business and finance. The director's span of authority and control usually includes building and plant maintenance, renovation, limited amounts of new construction, custodial care of building and grounds, operation of the motor pool, refuse disposal, snow removal, and other campus services. In addition, campus security, including police and fire protection, and the operation of heating plants are usually the responsibility of the physical plant department director.

Contract custodial and maintenance services are employed in those instances where project expenditures, complexity, or size cannot be efficiently accommodated by the physical plant department's resources. For example, all universities subcontract major repair and improvement projects, and few perform their own elevator, electrical systems, or controls maintenance. In addition, Ohio State University and Ohio University subcontract portions of their janitorial services. Youngstown State University and Central State University retain outside firms to provide window-washing services.

During fiscal 1968, the 12 universities expended a total of $30.6-million in the operation of physical plants. This included $10.9-million for general building maintenance, $5.3-million for custodial services, and $1.9-million for care of grounds. These departments are staffed by over 3,300 full-time employees.

A complete breakdown of fiscal 1968 operating expenditures and other physical plant statistics is provided in the table below.

Appraisal of current operations

The physical plant departments of state universities in Ohio are appropriately organized according to functional responsibility and appear to be performing adequately. Despite the marked variance in age, size, layout, and adequacy of each university's facilities, the maintenance and custodial services performed on most campuses indicate a high level of staff pride and workmanship. The appearance of buildings and grounds at Bowling Green State University and Miami University is exceptional. Due to the vast difference in magnitude and makeup of the various physical plants, each university is confronted with its own unique set of operating problems. However, several problems common to most universities deserve particular attention.

Although the mechanics of sound work order systems have been established, accurate and timely operating cost information is not being generated to properly assist management in the daily administration and control of operations. Quantitative performance reports are not utilized for the evaluation and improvement of maintenance management. Furthermore, formal programs such as preventive maintenance and systematized maintenance scheduling based on priority, work content, and available resources have not generally been implemented. All aspects of maintenance planning and control require strengthening. As an integral part of maintenance planning, the physical plant staff should be consulted prior to and during new construction.

Custodial performance could be improved by applying modern industrial practices. Such applications are all the more important because of the difficulty of recruiting and retaining capable maintenance employees. The present civil service wage structure has contributed to a high turnover.

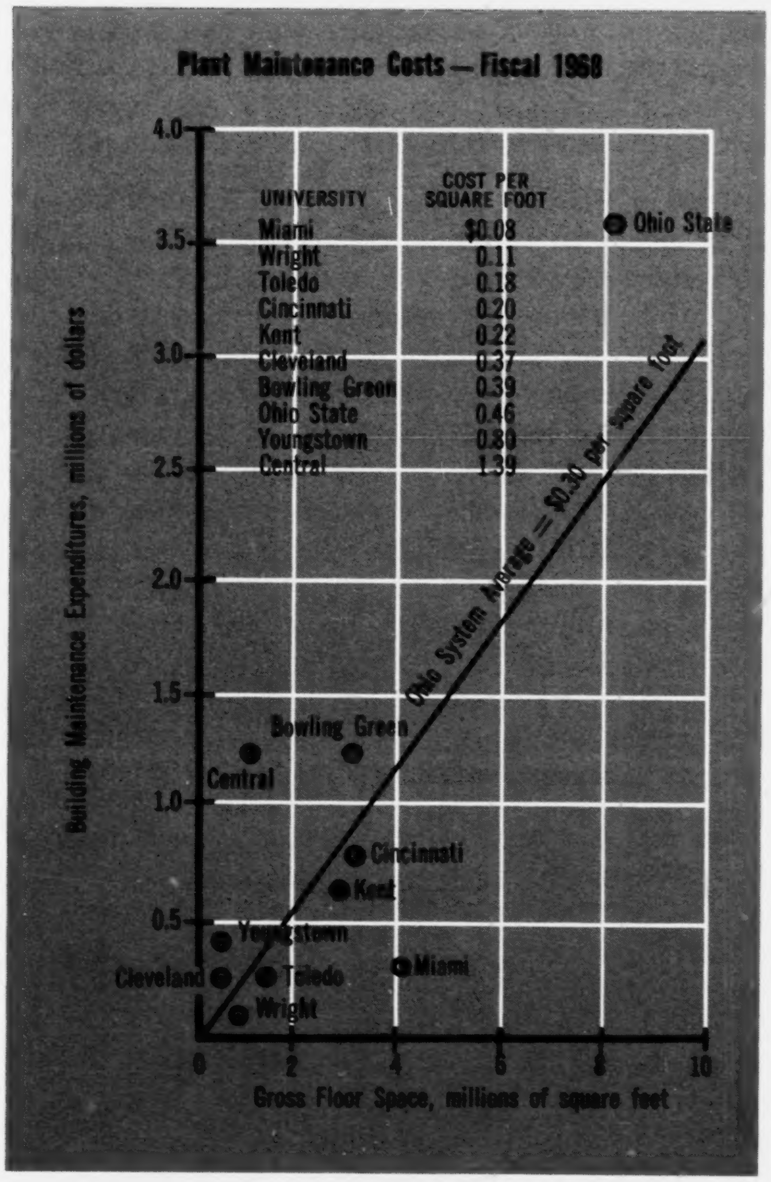
Individual university maintenance and custodial performances for fiscal 1968 are compared in the graphs on the facing page. These cost-per-square-foot estimates are gross measures of physical plant effectiveness and are directly related to the nature and complexity of the physical plant environment. However, the wide variations in maintenance and custodial costs, as depicted in the graphs, amplify the need for management practices for cost measurement and control.

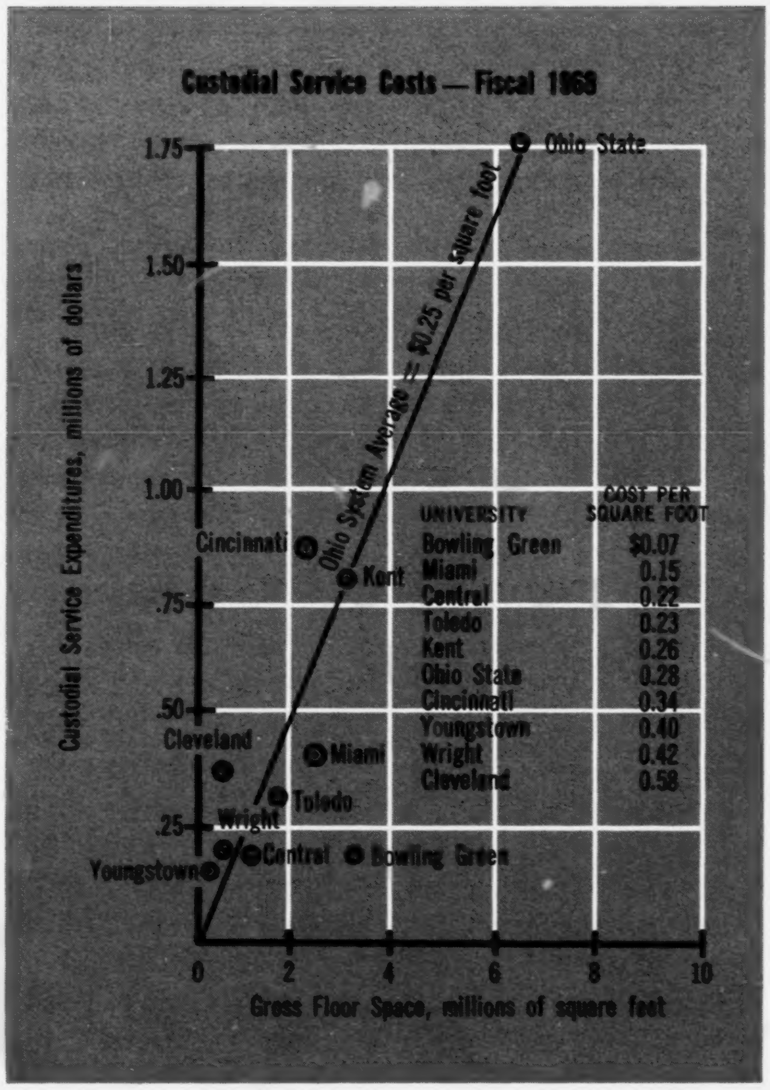
For example, the average cost of maintaining physical facilities is estimated to be $0.30 per square foot of floor space. Individual performance ranged from $0.08 per square foot at Miami University to $1.39 per square foot at Central State University, where routine and preventive maintenance are nonexistent and maintenance is performed on an emergency-only basis. Custodial costs at Ohio's universities average $0.25 per

PHYSICAL PLANT STATISTICS AND OPERATING EXPENDITURES — FISCAL 1968

	AKRON	BOWLING GREEN	CENTRAL	CINCINNATI	CLEVELAND	KENT	MIAMI	OHIO STATE	OHIO	TOLEDO	WRIGHT	YOUNGSTOWN	TOTAL
Physical Plant Statistics													
Land, thousands of dollars	2,670	2,212	792	7,000	4,291	2,858	1,220	16,667	5,201	1,354	837	636	45,738
Buildings, thousands of dollars	14,680	56,040	12,746	67,005	6,809	56,462	65,543	169,541	42,435	17,914	9,549	6,698	525,422
Equipment, thousands of dollars	4,623	10,891	2,927	21,670	3,054	16,707	5,414	66,061	39,717	5,145	2,351	3,440	182,000
Construction in progress, thousands of dollars	16,958	19,528	377	8,440	6,924	17,586	17,504	22,018	11,630	—	647	—	121,612
Improvements other than buildings, thousands of dollars	217	5,212	647	2,668	—	1,920	2,778	4,331	1,866	1,173	63	68	20,943
Investment in plant, thousands of dollars	39,148	93,883	17,489	106,783	23,186	95,533	92,459	278,619	100,849	25,586	13,447	10,842	897,824
Gross area floor space, square feet	1,349	3,122	873	4,000	634	3,162	4,200	12,300	4,275	1,400	523	500	36,338
Physical plant staff	166	266	82	326	156	406	236	1,000	325	151	94	106	3,314
Operating Expenditures, thousands of dollars													
Administration	247	207	76	260	66	56	124	276	100	78	35	239	1,764
Janitorial service	—	193	190	876	390	813	390	1,729	—	325	227	205	5,338
Repair of buildings	1,231	1,225	122	766	229	698	341	3,715	1,865	249	58	414	10,913
Care of grounds	102	345	60	133	28	280	153	723	—	96	20	14	1,954
Heating and power plant	219	228	90	228	44	280	198	613	232	116	—	—	2,248
Campus security	87	148	77	154	75	191	152	—	266	127	42	39	1,358
Operation of motor vehicles	89	44	26	219	15	6	55	406	80	41	10	16	1,007
Purchased utilities	—	820	78	311	86	331	216	413	406	132	140	100	3,033
Other	—	—	78	60	465	—	92	1,607	565	88	—	60	3,015
Total Operating Expenditures	1,975	3,210*	797	3,007	1,398	2,655*	1,721	9,482	3,514	1,252	532	1,087	30,630

* Includes Auxiliary Enterprises





square foot of floor space, while individual university performance ranges from $0.07 per square foot at Bowling Green State University to $0.58 per square foot at Cleveland State University.

The cost differences between universities can be attributed to the following conditions:

- Physical facilities vary widely in age, condition, design, and layout.
- Economy of size lowers the costs of major institutions, while smaller universities experience higher fixed costs.
- Costs are not accurately identified and are often improperly charged. Ohio University and the University of Akron are not portrayed because their maintenance and custodial costs are not reported separately.
- Maintenance and custodial standards are not uniform. An institution can temporarily keep its cost low by letting its facilities decline into disrepair.
- Maintenance and custodial management programs vary in effectiveness.

Thus, it is extremely difficult to draw specific conclusions from such comparisons. However, it is evident that Miami University conducts effective maintenance and custodial programs at comparatively low cost. Bowling Green State University's custodial cost performance is exceptional. Therefore, other universities could considerably improve their performance through implementation of sound programs of effective and adequate management control. However, because of the previously cited differences in universities (age, size, construction, condition), this does not mean that all should necessarily reach the same cost level.

Recommendations for improvement

The following recommendations are presented to increase the effectiveness of university physical plant operations. Unless otherwise noted in individual recommendations, they are applicable to all universities. They are indicative of the problems and weaknesses of most of the physical plant operations. Certain strengths are also noted at particular universities as related to cost and planning controls. By implementing these recommendations, the physical plant departments can improve their management control and operational effectiveness.

1. *Institute a cost system for identifying and allocating the full expense of university maintenance services to user departments.*

Accurate and complete cost data are a necessary requisite to the operation and control of any important responsibility. Presently, however, a large segment of the maintenance costs relating to physical plant operations are not sufficiently identified. Without detailed cost data on maintenance, labor, and materials expended for each facility or cost center, the management of the physical plant cannot effectively plan and measure operational efficiency. All costs must be accurately identified so manpower performance and equipment utilization can be effectively controlled.

In order to identify current and potential trouble-spots and fully comprehend the actual costs of maintaining university buildings and equipment, a more detailed reporting system must be developed. Typically, a work order system is employed by the universities to provide the mechanism for deploying workers to their assignments. However, only at Ohio State University and Cleveland State University is this system used as the basis for collecting information and costs associated with major expenditures.

In addition, a fee similar to a rental charge should be established. It should encompass charges for general maintenance and repairs, utilities, and custodial services. Extraordinary moving and alteration expenses should be charged to the appropriate department by using job-related cost information gathered from the work order system. Maintenance overhead costs can be allocated on any acceptable basis such as man-hours or man-material dollars spent. In this manner, all costs of maintenance services would be charged to each facility or cost center. Time cards and material requisitions would provide data on time and materials.

The management operating reports which will use the data generated by this information system are addressed in the next recommendation.

2. *Utilize operating reports for improvement of maintenance management.*

As stated in the previous recommendation, few universities in Ohio have a cost system which allows them to evaluate the effectiveness of their maintenance operations. Several important reports and records are needed by maintenance management and supervision in order to operate this department effectively and ensure adequate support of the university's objectives.

First, a report of dollars expended for maintenance, labor and materials should indicate the average monthly costs from the previous year and to date of the current year. The reports of monthly departmental expenditures normally circulated do not adequately identify costs and overlook trends entirely. Data may be broken down further to indicate the relative percentage of preventive, scheduled, nonscheduled, and emergency maintenance performed. In addition, the report should display costs by major cost center (each building and major operating system within it). Such comparisons, as well as those with budgeted costs for the past month and year to date, are extremely useful for judging performance and controlling the maintenance function. Cost reports should be circulated to department heads so they can control their responsibilities.

Second, a record of work backlog would indicate the need for management action. Decisions to subcontract or commence with previously deferred major projects depend on this information. The simplest approach is to record orders received and delete orders completed each day. A much more useful report would show the number of hours estimated for work order requests to indicate two- to three-week backlog trends. Backlog records are very effective for manpower planning both on a long-term and a day-to-day basis. Control becomes most effective if the reports are broken down by key crafts. This aids in overtime planning and is the basis for justifying additional craftsmen.

Third, a record of maintenance on all major plant equipment should be kept to indicate the type and amount of maintenance performed. This is vital to evaluating economic replacement of equipment. Moreover, this fundamental information system should be expanded to include all physical plant operations.

3. *Establish a planning-scheduling function for maintenance and service activities.*

The effectiveness of university maintenance programs could be substantially increased through the application of work planning and scheduling. The University of Cincinnati, Cleveland State University, and Ohio State University were the only major institutions to have progressed very far in the development of well-structured systems of work planning and scheduling. The establishment and implementation of basic work planning and scheduling procedures are a key part of maintenance management. They provide for organized and rapid accomplishment of critical repairs, complete preventive maintenance inspections, other recurring work, and effective utilization of manpower. This results in a balanced and low-cost operation.

Maintenance management will achieve best results when each worker is given a definite task—when he, his colleagues, and his supervisor know what is expected of him. Ideally, he should also know the goal, or target time, for the completion of the job. However, planning the task requires different skills than performing the task. Furthermore, the worker should not have to interrupt his activity to plan the job sequence.

Planning and scheduling labor is the responsibility of management. Both these functions must be performed if the maintenance program is to be effective. The smaller maintenance groups need only to do them informally, that is, by foremen getting together and working out how and when the jobs will be done. Major university maintenance departments require a planning and scheduling clerk to specialize in working out the plan and developing the schedule. This clerk then meets with the foreman, explains the plan, and acts as the coordinator on multicraft jobs.

In addition, the planner-scheduler would determine job priorities and further assist the physical plant supervisors by compiling and analyzing maintenance costs and performance data. His basic responsibilities would include the following:

- Assist in the application of a work order control system.
- Establish a means of backlog control covering both overall and current conditions.
- Perform daily scheduling and weekly forecasting of all maintenance and service work.
- Maintain equipment record systems.
- Establish direct, indirect, and general costs of department's work and aid in establishing budgetary controls using such costs.
- Carry out a job methods and preplanning program covering methods, tools, materials, and skills.

Implementation of planning-scheduling procedures would provide more timely maintenance service and could increase manpower utilization by as much as 5%. This would save $400,000 annually.

4. Establish a preventive maintenance program.

With the exception of Wright State University, Ohio State University and Miami University, preventive maintenance has been seriously neglected. Preventive maintenance locates potential sources of trouble and corrects them before costly repairs are required or breakdowns occur. Its purpose is to maintain equipment, facilities, and property in optimum condition.

An effective preventive maintenance program must include the following four elements:

- Inspections—Key equipment systems and facilities must be inspected at predetermined intervals. Potential troublespots must be noted so that necessary work orders can be prepared and repairs made.
- Repair—It is not sufficient to have the preventive maintenance inspector locate and diagnose trouble. There must be a concerted and coordinated effort to schedule and correct the difficulty.
- Servicing—Routine preventive maintenance service operations such as lamping, lubricating, blowing dust from motors, and cleaning steam traps must be scheduled and accomplished if preventive maintenance is to be effective.
- Follow-up—A continuing reappraisal of inspection frequencies and methods should be made.

A sound preventive maintenance program can increase the life and dependability of equipment, improve the effectiveness of the maintenance staff, and avoid emergency repairs. Other benefits include:

- Building maintenance and repair costs should be reduced by timely repair of roofs, exteriors, interior walls, ceilings and floors, grounds, operating equipment, and mechanical and electrical services.
- Reduction of emergency maintenance will allow scheduled work to be completed.
- Capital funds needed to replace or repair buildings or equipment will be reduced after the program has been in effect for a few years.
- Costs can be ascertained for future manpower and budget requests.

Maintenance expenditures of Ohio universities for 1967/68 approached $11-million. Considering the adequacy of the few existing programs, a 5% improvement, or annual savings of $550,000, could be anticipated if this proposal is properly implemented. Therefore, such a program should be given high priority.

5. Include the director of the physical plant in the formal approval procedures for all new buildings and facilities designs.

The director of the physical plant should be one of the final signatures on approved plans for new buildings and facilities. Because of his experience in the operational and maintenance aspects of the physical plant, it is important to consider his knowledge in designing new facilities. Maintenance and custodial costs of new structures can be significantly affected by design details such as location of utility access panels, tunnels, surface finishes, floor tile, and other interior or exterior material selections.

Furthermore, early participation in construction planning by physical plant department personnel would ensure design and specification of mechanical and electrical equipment and systems which are completely compatible with existing ones. This would appreciably reduce the excessive modifications and engineering changes now required during startup of new facilities.

In addition, since the director of the physical plant is responsible for maintenance and repair of all physical facilities, it is essential that he be supplied with working drawings of all university buildings and facilities. To intelligently and efficiently carry out this responsibility, he must be able to quickly locate all facility components and elements requiring regular or emergency maintenance. Further, these data must be readily available to the personnel assigned to plan and perform the maintenance. Without them, much time may be lost in searching for access ways, tracing piping or wiring patterns, determining operating element specifications, or recommending maintenance procedures.

Delays occasioned by these situations add to maintenance costs and extend the time facilities may be out of operation. An earlier recommendation called for the establishment of an organized preventive maintenance program. Without a full set of drawings and specifications for all campus facilities, the organization of an effective program is impossible.

6. *Establish a system of measured work schedules for all custodial services.*

With the exception of Miami University and Ohio State University, the state-supported universities do not utilize formal measured work standards to establish custodial cleaning schedules. Since custodial operations are generally a rather costly effort due to the large numbers of people involved, it is important that the institutions make efficient use of custodial personnel.

Work schedules should be developed for each building or major area, taking into account the variables of condition, use, and layout. These schedules should include task description, order of performance, and time required. Additional schedules can relate repetitive duties and desirable frequency.

The use of standard time elements provides a means for planning and control that is missing when work schedules are developed on an experience-only basis. Measured schedules provide a management tool for determining required labor, equitably distributing the work load among the custodial staff, and measuring work performance levels. Major savings can result through systematic planning of all labor activities on a time-and-job basis.

Standard times for an overall schedule will vary according to layout, age, construction, sanitation level required, and the number of obstacles in each building. However, a good reference has been edited and distributed by the Trade and Industrial Education Instructional Materials Laboratory of the Ohio State University College of Education. Entitled "Custodial Training," it lists task and time standards for custodial operations.

With 1967/68 janitorial expenditures of approximately $5.3-million, small improvements in work efficiency could result in a significant reduction of costs. Where work is not measured and controlled, industrial engineers estimate performance averages only 60% to 70% of normal effort.

Potential improvement in custodial workers' performance through the use of engineered standards is estimated at 30% to 35% of labor cost. Attainment of only a 10% improvement would produce annual savings of $530,000.

7. *Centralize all custodial and maintenance functions under the control of the physical plant department.*

Several institutions including Bowling Green State University, the University of Cincinnati, Miami University, and Ohio University have custodial and/or maintenance responsibility split between the physical plant department and other university operations such as the student union, residence halls, or food services. Fragmentation of control of these activities encourages duplication of effort and eliminates the possibility of economies associated with centralized control, such as flexibility of work force, improved training, increased supervision, and more efficient work assignments.

All these activities should be centralized in the physical plant department. This combination of like activities will not only eliminate a large portion of the problems outlined above but also simplify accounting procedures. Centralization should also encourage the general upgrading of maintenance and custodial services through closer supervision. In addition, it will enable the assignment of personnel to broader building responsibilities so that a task orientation of duties can be approached.

8. Evaluate the task system of custodial management.

Custodial services throughout Ohio universities are exclusively area-oriented. Thus, individual custodians are responsible for total cleanliness of a specific area or building.

Each university should carefully consider and evaluate the techniques applied by contract service firms. These organizations achieve a high level of performance through better supervision, more physically able employees, improved organization, and careful assignment of work. Basic to their approach are the task assignment of their custodians and the use of measured work standards for planning and control. Conversion to a task-oriented custodial system such as employed by contract service firms can result in significantly improved operating efficiency. This change would probably require the development of new personnel policies, and it is suggested that this be assigned to the director of nonacademic personnel at each university.

Conversion to the task system, coupled with centralization of custodial services under the director of the physical plant, could reduce custodial staffs by an additional 5%, for annual savings of $225,000.

9. Study total compensation plans for custodians and maintenance personnel.

Ohio's universities must be able to recruit and maintain competent custodial and maintenance personnel. Turnover of physical plant personnel ranged from 25% to 45% during 1967/68. The ability to attract and hold these people may have been greatly hampered by university and civil service pay rates. Personnel shortages result in assignment of costly outside contractors to perform maintenance projects which should be accomplished by physical plant craftsmen. Therefore, a complete study of the total compensation plans for these two classifications is recommended.

Since pay grades and classifications are established by the Ohio State Civil Service Commission, it must approve any changes, and the state Director of Personnel must administer them. The State of Ohio should analyze the differences between university and local industry pay scales, including all fringe benefits. If warranted by the findings of this analysis, an adjustment should be made in the classification plan. This will help attract and retain more qualified personnel and ultimately improve the services provided by the plant maintenance organization.

Community Colleges and Technical Institutes

Prior to 1966, there were only two community colleges in the Ohio system of public higher education. In 1966 and 1967, two more community colleges and four technical institutes were established as part of the state system. Permanent facilities exist for only two of these eight institutions. All others are in various phases of construction, and classes are now conducted in high schools and other rented facilities. Another community college and six more technical institutes are planned for the system in the 1969/70 school year. The newness of these operations and the general state of change in which these fast-developing institutions find themselves made a detailed review inappropriate at this time.

Ohio's four community colleges and three technical institutes had a total income of over $14.6-million and total expenditures of over $13.9-million in fiscal 1968. Total enrollment in community colleges and technical institutes is expected to reach 50,000 to 55,000 in the next six years. By extrapolation, these enrollments will grow to an estimated 66,000 by 1980.

Community Colleges

The community college serves several categories of student educational needs. It provides a two-year terminal program in vocational or technical subjects for students whose abilities, interests, or financial situations can best be served in this manner. In addition, it offers the first two years of a four-year baccalaureate program to those who plan to transfer to a university. Moreover, there is the opportunity for a student to shift from one program to another with a minimum loss of time. For example, a student pursuing an associate degree in engineering technology may decide he would rather continue into a four-year baccalaureate program. Continuing and remedial education are also provided.

At present, four community colleges are in operation in Ohio. Cuyahoga Community College, the largest, is located in Cleveland, and Lorain County Community College is in Elyria. Both institutions are on permanent campuses. Lakeland Community College is now located in both Mentor and Painesville, while a permanent campus is being constructed on a 390-acre site in Mentor. Sinclair Community College in Dayton is just now embarking on a construction program to create a permanent campus.

Voters have rejected several of the local referendums to provide increased funds for community colleges. Lorain County Community College was turned down three times recently. A proposed community college in Mahoning County was defeated by the voters. The table shown below summarizes the financial status of Ohio's four community colleges for fiscal 1968. Cuyahoga Community College and Lorain County Community College accounted for more than 81% of the total expenditures of the community college system.

The table on the next page reports actual and projected enrollments in Ohio's community colleges for 1965 through 1975. Here, Cuyahoga Community College accounts for over 60% of the total community college enrollment. An increase in enrollment of over 100% is expected in the community college system by 1975.

INCOME AND EXPENDITURES
OHIO'S COMMUNITY COLLEGES — FISCAL 1968
(Thousands of Dollars)

	CUYAHOGA	LAKELAND	LORAIN	SINCLAIR	TOTAL
Current Income					
Instruction and general:					
Government appropriations	$4,659	$ 779	$1,197	$ 878	$ 7,513
Student fees (and tuition)	2,029	218	938	531	3,716
Gifts and grants	105	22	156	18	301
Departmental charges	8	—	—	—	8
Recovery of indirect costs	25	—	—	—	25
Other	20	41	21	15	97
Total	$6,846	$1,060	$2,312	$1,442	$11,660
Public service	$ 220	—	$ 4	—	$ 224
Auxiliary enterprises	662	$ 68	247	—	977
Student aid	106	—	74	—	180
Organized research	—	—	31		31
Total Current Income	$7,834	$1,128	$2,668	$1,442	$13,072
Current Expenditures					
Instruction and general:					
Departmental instruction	$3,788	$ 475	$1,117	$ 785	$ 6,165
Instructional services	179	—	20	—	199
Libraries	318	29	71	49	467
Plant maintenance	787	206	383	93	1,469
Student services	756	67	184	88	1,095
General expenses	528	153	147	132	960
General administration	490	129	221	96	936
Other	—	—	—	—	—
Total	$6,846	$1,059	$2,143	$1,243	$11,291
Public service	$ 220	—	$ 9	—	$ 229
Auxiliary enterprises	590	$ 58	229	—	877
Student aid	106	—	84	—	190
Organized research	—	—	30	—	30
Total Current Expenditures	$7,762	$1,117	$2,495	$1,243	$12,617
Excess or (Deficit) of Income over Expenditures	$ 72	$ 11	$ 173	$ 199	$ 455

OHIO COMMUNITY COLLEGE ENROLLMENTS — 1965-1975

YEAR	CUYAHOGA HEAD COUNT	CUYAHOGA FULL-TIME EQUIVALENT	LAKELAND HEAD COUNT	LAKELAND FULL-TIME EQUIVALENT	LORAIN HEAD COUNT	LORAIN FULL-TIME EQUIVALENT	SINCLAIR HEAD COUNT	SINCLAIR FULL-TIME EQUIVALENT	TOTAL HEAD COUNT	TOTAL FULL-TIME EQUIVALENT
1965	9,833	5,130	*	*	1,849	1,192	*	*	11,682	6,322
1966	10,609	5,700	*	*	2,751	1,923	2,231	1,006	15,591	8,629
1967	12,673	6,324	1,073	660	3,162	2,220	2,576	1,455	19,484	10,659
1968	14,889	7,692	1,626	1,016	3,259	2,445	2,708	1,459	22,482	12,612
1969	15,600	8,500	2,081	1,332	3,652	2,650	3,276	1,802	24,609	14,284
1970	17,200	9,290	2,580	1,638	3,994	2,900	3,526	1,939	27,300	15,767
1971	18,950	10,200	3,006	1,894	4,458	3,114	3,710	2,041	30,124	17,249
1972	21,400	11,600	3,375	2,109	4,826	3,502	6,134	3,680	35,735	20,891
1973	22,800	12,300	3,761	2,382	5,333	3,856	6,639	3,983	38,533	22,521
1974	24,600	13,300	4,067	2,501	5,755	4,301	7,003	4,202	41,425	24,304
1975	27,200	14,700	4,463	2,722	5,984	4,750	7,682	4,610	45,329	26,782

* Not in operation.

Technical Institutes

The technical institute, a recent innovation in Ohio's system of public higher education, provides the opportunity for technical training. While the education received at a technical institute is not specifically terminal, the institution by its nature does not provide the arts and science curricula necessary for a four-year program.

INCOME AND EXPENDITURES
OHIO'S TECHNICAL INSTITUTES — FISCAL 1968*
(Thousands of Dollars)

	CLARK	COLUMBUS	PENTA	TOTAL	TOTAL COMMUNITY COLLEGE AND TECHNICAL INSTITUTES
Current Income					
Instruction and general:					
Government appropriations	$143	$371	$449	$ 963	$ 8,476
Student fees (and tuition)	125	177	244	546	4,262
Gifts and grants	3	—	—	3	304
Departmental charges	—	—	—	—	8
Recovery of indirect costs	—	—	—	—	25
Other	—	7	3	10	107
Total	$271	$555	$696	$1,522	$13,182
Public service	—	—	—	—	$ 224
Auxiliary enterprises	—	$ 34	$ 5	$ 39	1,016
Student aid	—	—	—	—	180
Organized research	—	—	—	—	31
Total Current Income	$271	$589	$701	$1,561	$14,633
Current Expenditures					
Instruction and general:					
Departmental instruction	$120	$369	$328	$ 817	$ 6,982
Instructional services	—	—	—	—	199
Libraries	—	6	—	6	473
Plant maintenance	—	25	48	73	1,542
Student services	27	26	20	73	1,168
General expenses	1	139	20	160	1,120
General administration	21	—	35	56	992
Other	—	46	—	46	46
Total	$169	$611	$451	$1,231	$12,522
Public service	—	—	—	—	$ 229
Auxiliary enterprises	—	$ 27	$ 12	$ 39	916
Student aid	—	—	—	—	190
Organized research	—	—	—	—	30
Total Current Expenditures	$169	$638	$[illegible]63	$1,270	$13,887
Excess or (Deficit) of Income over Expenditures	$102	($ 49)	$238	$ 291	$ 746

* Jefferson County Technical Institute not in operation during fiscal 1968.

The technical institutes currently in operation are Clark County Technical Institute in Springfield, Columbus Technical Institute in Columbus, Jefferson County Technical Institute in Steubenville, and Penta County Technical Institute in Perrysburg. A division of the last is located at the Ohio State University branch campus in Lima. This technical center came into existence as a result of Ohio State University's recognition of the need for technical education in Lima but a hesitancy of its faculty to participate in this field.

The table at the left shows the income received and expenses incurred by three of Ohio's technical institutes in fiscal 1968. The fourth was not in operation that year. Student enrollments in the four technical institutes are expected to increase more than 100% by 1975, as shown in the table below, "Ohio Technical Institute Enrollments, 1967-1975."

University Branches

According to the Master Plan, the university branch is intended to offer the first two years of a baccalaureate program. In addition, where community needs exist, programs of technical education also may be estab-

OHIO TECHNICAL INSTITUTE ENROLLMENTS — 1967-1975

YEAR	CLARK HEAD COUNT	CLARK FULL-TIME EQUIVALENT	COLUMBUS HEAD COUNT	COLUMBUS FULL-TIME EQUIVALENT	JEFFERSON HEAD COUNT	JEFFERSON FULL-TIME EQUIVALENT	PENTA HEAD COUNT	PENTA FULL-TIME EQUIVALENT
1967*	322	325	492	586			566	524
1968**	483	506	531	579	323	236	717	690
1969	975	815	900	N/A	510	425	N/A	850
1970	1,235	1,021	1,250	N/A	699	N/A	N/A	1,000
1971	1,360	1,152	1,550	N/A	805	N/A	N/A	1,900
1972	1,690	1,458	1,950	N/A	924	N/A	N/A	2,350
1973	1,870	1,614	2,250	N/A	1,049	N/A	N/A	2,925
1974	1,950	1,670	2,650	N/A	1,189	N/A	N/A	3,600
1975	2,125	1,850	3,000	N/A	1,281	N/A	N/A	4,475

N/A=Data not available
* First year as part of the state system for Clark, Columbus, and Penta.
** First year as part of the state system for Jefferson County.

lished. Thus, branches become quite similar to community colleges in terms of their assigned mission.

University branches have been established at 18 locations, as indicated in the table below. In 1968/69, over 18,000 students were enrolled in these branches. Enrollments for each branch are also included.

UNIVERSITY BRANCH LOCATIONS AND ENROLLMENTS — 1968/69

UNIVERSITY	BRANCH	FULL-TIME EQUIVALENT	HEAD COUNT
Bowling Green	Firelands	413	577
Cincinnati	Walters	1,175	1,213
Kent	Ashtabula	681	852
	Columbiana County	697	917
	Stark County	1,509	2,140
	Trumbull County	457	697
	Tuscarawas County	467	629
Miami	Hamilton	374	1,135
	Middletown	826	2,156
Ohio State	Lima	936	1,070
	Mansfield	842	999
	Marion	451	550
	Newark	608	737
Ohio	Belmont County	707	1,034
	Chillicothe	420	694
	Lancaster	407	799
	Portsmouth	591	848
	Zanesville	614	1,054
Total		12,175	18,101

Appraisal of current operations

In terms of enrollment, Cuyahoga Community College is the largest two-year institution. With two campuses, it is already a large facility with many of the administrative problems of the large universities. The other three community colleges are rapidly emerging institutions. Sinclair Community College and Lakeland Community College are just embarking upon construction programs to provide permanent campuses. Thus their administrators are necessarily occupied with planning the new facilities and determining their effect on public acceptance and student demand.

Three of the technical institutes received charters and have operated as state institutions for only two years. The fourth, Jefferson County Technical Institute, began its first year of operation in 1968/69. For this reason, these institutions have not had an opportunity to develop a great degree of public acceptance in terms of enrollment. The total for all four technical institutes in 1968/69 was a little over 2,000 students. Administrators of these facilities generally utilize accepted business practices and, due to their small size, are not stressed by areas where improvements can be made.

During the early years of an educational institution, any attempt to measure performance in such areas as space utilization, student mix by curriculum, or total operational cost per student is difficult. It is at this point, however, that the development of adequate procedures and methods is most important and has the greatest effect on the ultimate operation of the institution.

In terms of the assigned role of university branches, there is considerable overlap with the community colleges. Arguments have been advanced concerning the exchange of faculty between branches and the main campus. Interviews indicated this happens to some degree, but it is not a major consideration in lower-division instruction. Many records maintained by the branches duplicate those of the main campuses. In addition, because of the smaller size of the branches, many of the procedures used at the main campus are not appropriate.

Recommendations for improvement

The following recommendations suggest that responsibility for certain functions be assigned to the Board of Regents to provide services not now available to all emerging institutions. These recommendations are directed toward the development of more effective administration and management of two-year institutions—community colleges, technical institutes, and branches—in their present and future roles.

1. *Consider the establishment of a two-year college system to perform the functions of existing university branches, community colleges, and technical institutes.*

The Master Plan published by the Board of Regents in 1966 describes the missions of university branches, community colleges, and technical institutes in such a manner that there is considerable overlap among these three types of institutions. For example, technical education programs are offered in university branches, community colleges, and technical institutes. The Master Plan also states the two-year programs in general education are of primary importance in the community colleges and university branches.

As more community colleges, technical institutes, and university branches are added to the system, it will be difficult to prevent the development of competition for many of the same students. This could result in unnecessary duplication of facilities and staffs. An example of this is the community and technical college associated with the University of Toledo, which is building an entirely new campus. At the same time, an additional $5-million has been requested for development of nearby Penta County Technical Institute.

Ohio State University recognized the need for technical education at its Lima branch campus. It also realized that the interests and capabilities of its faculty were not in technical education in the lower division. Consequently, an extension of Penta County Technical Institute was established at Ohio State University's Lima branch. With this situation, however, administrative and recordkeeping procedures can become excessively complex and too intermeshed to provide efficient and effective service at minimum costs.

The Hamilton branch of Miami University is about to assume responsibility for a technical institute now operated locally without state support. Consolidation of these two administrative organizations will prove advantageous. However, utilization of systems established for Miami University will offer little advantage. Student records are duplicated because both the parent university and the branch must maintain the same information. The registration procedure and fee payment system of the main campus is more cumbersome at the branch. The university's system does not accommodate the flexibility needed in a smaller unit.

In general, procurement of materials and supplies is often more cumbersome at the branches because of the extended lines in the approval procedure. Academic and facilities long-range planning for the branches is not done as part of a single plan for the parent university. The branch finds itself low on the priority list for development. Also, administrative personnel experienced in traditional university systems are not always suited to the branch's commuter population.

Jefferson County Technical Institute, located in an area with only one small private university, found that 50% of its entering students desired general education credits which could be transferred to a baccalaureate program. If this institution operated as a community college, such credits could be provided.

The separate development and administration of community colleges, technical institutes, and university branches as different categories of institutions do not appear to offer many advantages. On the contrary, it appears to create a situation which inhibits rather than enhances the educational process, since it can cause uneconomic employment of facilities and staffs as well as make administrative systems more cumbersome. Thus, development of a two-year system seems desirable.

However, the establishment of a two-year college system necessarily has broad educational implications which are beyond the scope of this study. For that reason, it is suggested the establishment of a two-year system be investigated as one aspect of the development of an updated Master Plan, as previously recommended in the Overall System Management section.

The two-year college system considered should consist of the following:

- The redesignation of all 18 branches, 4 community colleges, and 4 technical institutes as 2-year colleges with similar educational missions but with different emphasis on various programs to reflect community and student needs.
- The appointment of the head of a two-year college as a member of the Board of Regents. The Overall System Management section of this report recommends the inclusion of three professional educators from the public system of higher education on the Board of Regents. Since the two-year college system would include over one-third of the entire enrollment in public higher education, one of these educators should be the head of a two-year college.
- The creation of the position of Vice Chancellor on the staff of the Board of Regents to coordinate the 2-year college system of 26 institutions. The size of the system together with its unique mission would make it necessary for the Chancellor of the Board of Regents to have direct access to an executive with a broad background in two-year institutions who could appropriately represent their needs. In addition, the Vice Chancellor would coordinate the development of appropriate business and management systems through the institutional services and planning staffs proposed in the Overall System Management section of this report.
- The Vice Chancellor might be assisted by a staff with specialized backgrounds, perhaps in libraries, academic program development, or institutional research. This staff would be available to assist smaller institutions not able to justify employment of such specialists on a full-time basis.

As previously indicated, the educational implications of a two-year system are extensive. However, the potential benefits make an evaluation highly desirable.

2. Plan all data processing facilities for utilization of the proposed regional computer centers.

All community colleges and technical institutes have data processing equipment. The size and type of these computers vary considerably, but their application to educational and administrative needs is essential.

Expenditures to support the rapidly growing need for computers will increase two to three times over the next five years if each institution continues its independent development. Considerably more computer capability at much less cost will be possible if regional computer networks are established to serve all institutions within a particular geographic region. Penta County Technical Institute is already participating in planning discussions with Bowling Green State University, the University of Toledo, and the Medical College of Ohio at Toledo to form such a network for northwest Ohio.

A detailed discussion of the regional computer center concept has been presented in the Overall System Management section of this report.

3. *Develop plans for all future facilities to achieve a 50% student station utilization in permanent general classrooms.*

Lakeland Community College and Sinclair Community College are using leased temporary space for instruction, and these facilities are crowded. Permanent campuses are being built for each, but neither will be occupied before the fall of 1971. Cuyahoga Community College is completing its new central campus, and Lorain County Community College is now occupying a very new campus.

Columbus Technical Institute has been overcrowded, but this will be relieved when its new facility is opened in 1969. Clark County Technical Institute has been in new facilities one year. Jefferson County Technical Institute started 1968/69 in its new building.

Because of the newness of most facilities and the planned replacement of others, there necessarily is an imbalance between classroom space and student enrollment at this time. Thus, space utilization data are of little value at this point. However, it is important the standard of 50% student station utilization developed by the Board of Regents be incorporated into the planning process and achieved before additional classroom buildings are provided.

4. *Develop an accounting and reporting system for two-year college bookstore operations to enable improved management and control.*

Sizable bookstores are in operation at Cuyahoga Community College, Lorain County Community College, and Lakeland Community College. One is planned for the new Sinclair Community College campus, and Clark County Technical Institute recently staffed its bookstore. At Jefferson County Technical Institute, the bookstore is operated by the business manager's secretary as the need arises.

A facility manager should have timely and pertinent financial information. At present, bookstore managers at the community colleges and technical institutes do not receive this information. In no case was a monthly profit-and-loss statement provided by the accounting department. Adequate data for managing the operation were generally not available.

Since bookstores are generally profit operations, their managers must be aware of how well the facility is doing and where steps can be taken to improve performance. The manager should participate in the preparation of his budget and receive monthly reports which show income, expense, and profits in detail sufficient to assist him in controlling and managing the bookstore.

5. *Establish a comprehensive planning function.*

A planning function should be concerned with the identification of the institution's objectives in proper context with those of the state. It then coordinates the development of an academic plan, a capital plan, and a financial operating plan into an integrated comprehensive plan which achieves the objectives of the institution in an optimal fashion.

Most two-year institutions will always be too small to warrant establishment of a full-time comprehensive planning department. However, this function should be an assigned responsibility of one individual so that appropriate coordination and planning can be provided to the continuing development of the institution and its resources.

At Cuyahoga Community College and possibly Lorain County Community College, it is suggested that planning be assigned to an individual on a full-time basis. Since each of these institutions now has institutional research activities, it is suggested that they be consolidated into the planning activity.

Additional discussion of comprehensive planning appears in the Planning section of this report.

6. *Establish a management services function under the head of finance and business affairs.*

Cuyahoga Community College is the only two-year institution large enough to warrant the appointment of a person to staff a management services activity on a full-time basis. However, each institution should establish such a function.

Cuyahoga Community College is fast becoming a large institution and someday intends to operate three campuses under central management. In the process, it will be necessary to create as well as respond to the need for management change. The whole manner of management including organizational structure, facilities, equipment, systems, and procedures must be continually appraised and improved if the college is to maintain a healthy management position.

Aspects of this proposed management services function will involve the computer and require close coordination with the staff of the computer center. This group will be concerned with a wide variety of management improvement studies: better systems of financial control, improved office arrangements and work flow, effective maintenance control systems, equitable management performance standards, and economical new methods.

The management services function would also be expected to assist and sometimes act for the chief fiscal officer in the planning and acceptance of new computer-based business management systems with the director of the computer center. A responsibility of the management services function would be to ascertain that administrative management control systems are designed which comprehensively serve the needs of management.

7. *Encourage two-year institutions to establish or join cooperative and joint purchasing units locally and state-wide.*

Purchasing activities at Lakeland Community College are conducted by a professional purchasing agent. While still in its infancy, Lakeland Community College has participated in joint purchasing agreements with the Inter-University Council Purchasing Committee, a Lake County school district, and the Educational and Institutional Cooperative Association. At Penta County Technical Institute, consideration was given to joint purchasing with vocational institutions, but the analysis did not reveal significant savings. Membership in the Inter-University Council Purchasing Committee is being planned as a means for providing greater savings potential.

Cuyahoga Community College is taking steps to become an active participant in the Inter-University Council Purchasing Committee. No coordination activity has taken place with city, county, or local school units, however. Other institutions are taking similar steps, but most view these combinations as cumbersome and more trouble than the benefits produced.

The table above right shows an estimate of the supplies and miscellaneous equipment presently purchased by the two-year institutions.

ESTIMATED ANNUAL PURCHASES
SUPPLIES AND MISCELLANEOUS EQUIPMENT

Community Colleges		
Cuyahoga	$363,049	
Lakeland	59,564	
Lorain	142,018	
Sinclair	142,812	
		$707,443
Technical Institutes		
Clark	$ 28,750	
Columbus	40,291	
Jefferson	42,800	
Penta	89,640	
		$201,481
Total		$908,924

Potential savings through joint buying agreements on total supplies could amount to a minimum of 10% through increased volume. For the eight two-year institutions, this would amount to $90,000 annually. It is therefore suggested the Inter-University Purchasing Council Committee provide information for each institution's purchasing activity on existing cooperative agreements. Opportunities for coordination with closely related state and municipal spending units should also be developed.

8. *Broaden the personnel function at each of the two-year institutions.*

At Cuyahoga Community College, there is a separate personnel department, and at Lorain County Community College, a personnel officer has recently organized a department. At the other two-year institutions, personnel services for nonacademic employees are usually performed by the business manager. Although this is appropriate because of size, the functions performed are not. The application of personnel procedures is usually limited to civil service employees.

The ability to attract and retain qualified administrative personnel is often a result of competitive salary levels. Attrition for reasons other than salary cannot be accurately predicted. But if there are advantages to employment elsewhere in the local area, compensation should be adjusted. The retention of qualified personnel who provide a knowledge of the operation and continuity to the institution is a significant advantage.

Therefore, the personnel department or function at each institution should be expanded to include the following activities for all nonacademic employees:

- Wage and salary administration including preparation of job descriptions for job evaluation and wage surveys.
- Provision of a merit rating program to ensure a consistent system of performance evaluation for all employees.
- Recruitment of all nonacademic personnel by the personnel function in accordance with specifications of the requesting department.
- Termination processing of employees including exit interviews to monitor supervisory performance, employee attitudes and morale, as well as competitive markets for personnel.
- Orientation of new personnel to explain university operations, policies, procedures, and benefit and compensation programs.

9. *Conduct a study to determine whether there is justification for both community and technical colleges at the University of Toledo and the Penta County Technical Institute before investing additional capital in facilities.*

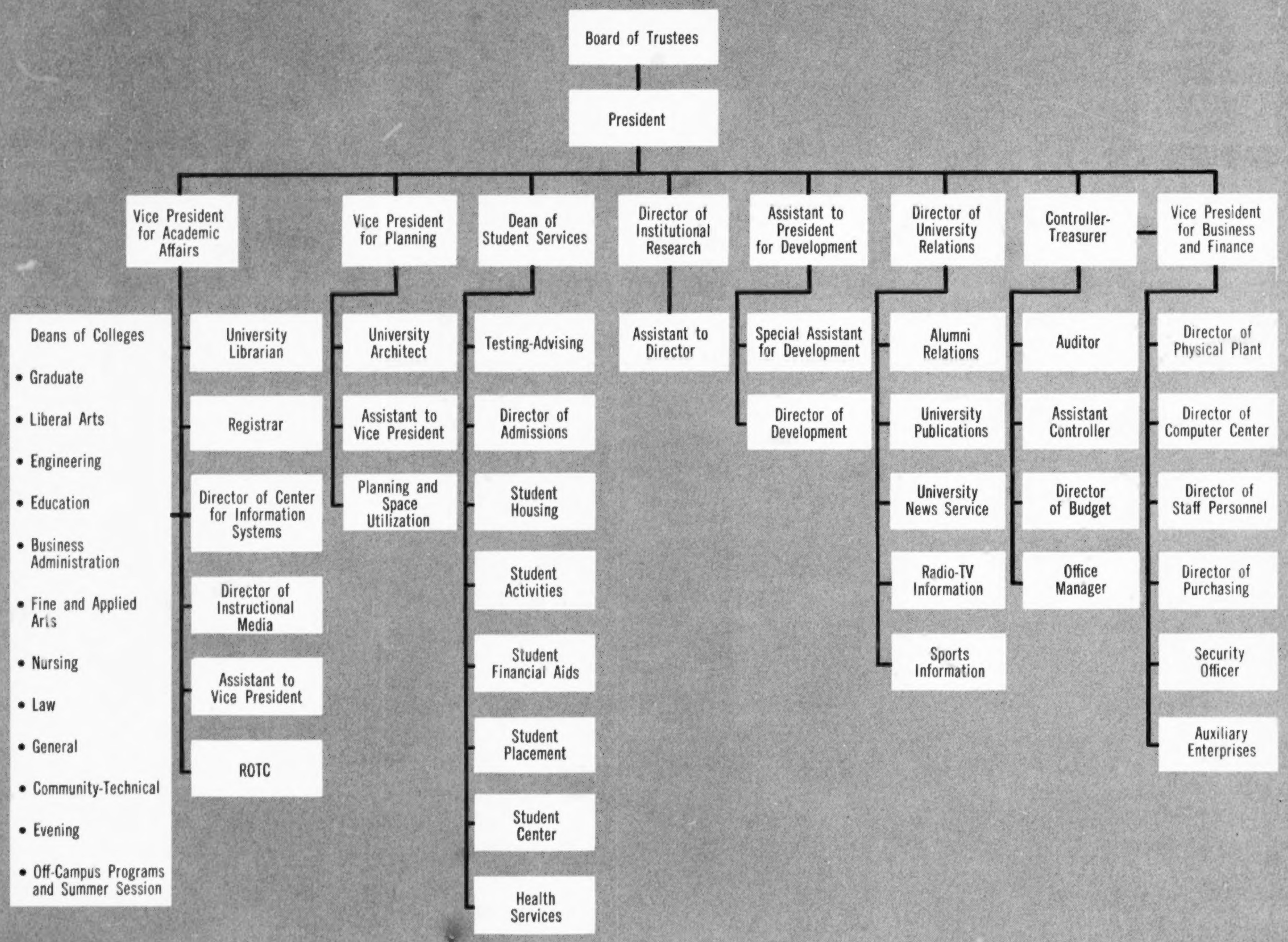
A new community and technical college campus is being constructed on a separate campus by the University of Toledo. This campus will be only eight miles from Penta County Technical Institute, which is now housed in buildings of a former military installation. The educational missions of the two schools are quite similar and overlap considerably. Since Penta is now filled to capacity, it has requested $4.8-million to initiate the first of a three-phase expansion.

There are several possible alternatives. However, it would certainly be worthwhile to evaluate separating the community and technical college from the University of Toledo and merging it into a single institution with Penta County Technical Institute. The separate faculty, administration, equipment, and facilities of two institutions necessarily contain considerable duplication when compared to a single institution.

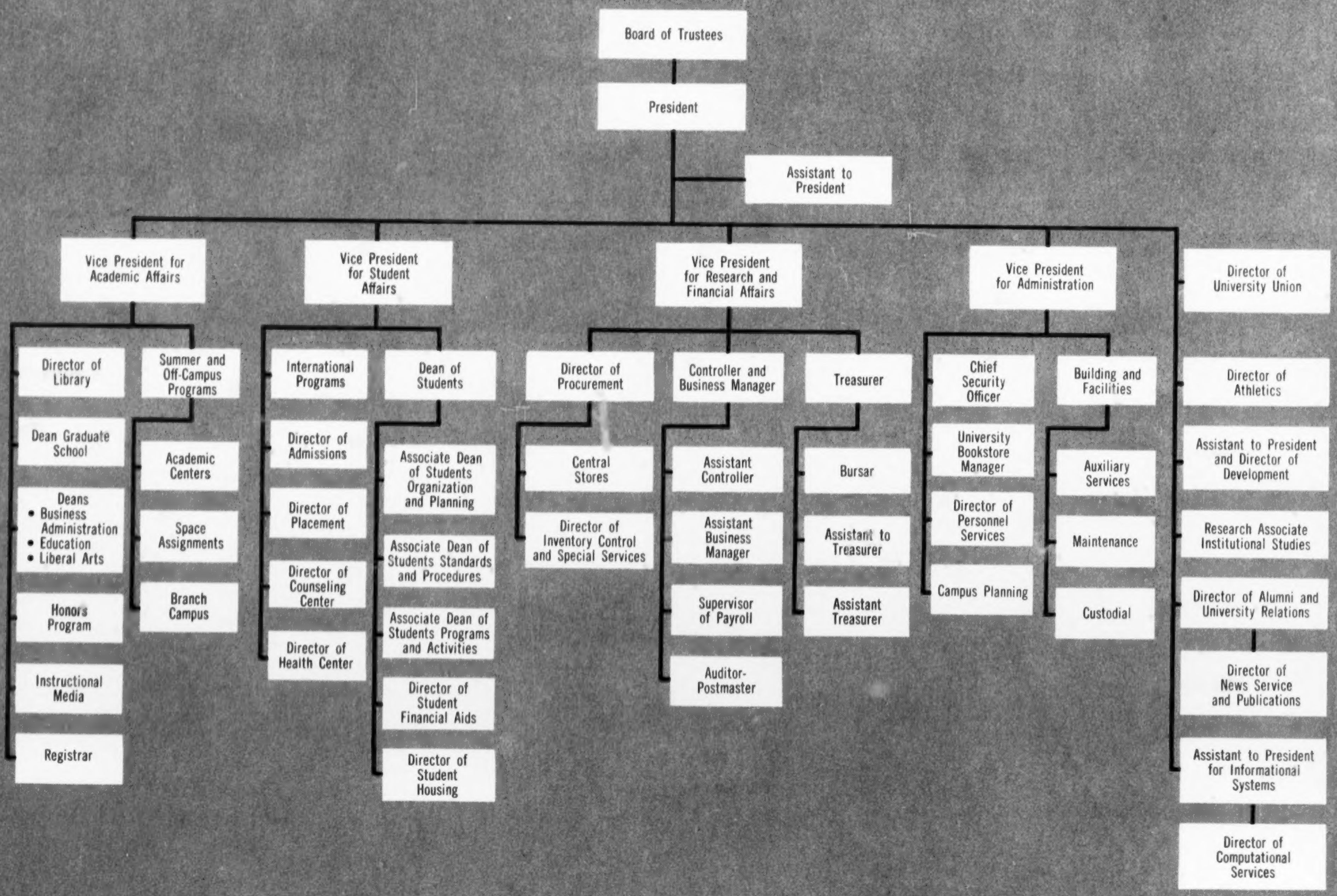
It is suggested this study be made before additional capital is invested in Penta County Technical Institute. This could very well delay the necessity for spending $4.8-million for several years.

APPENDIX

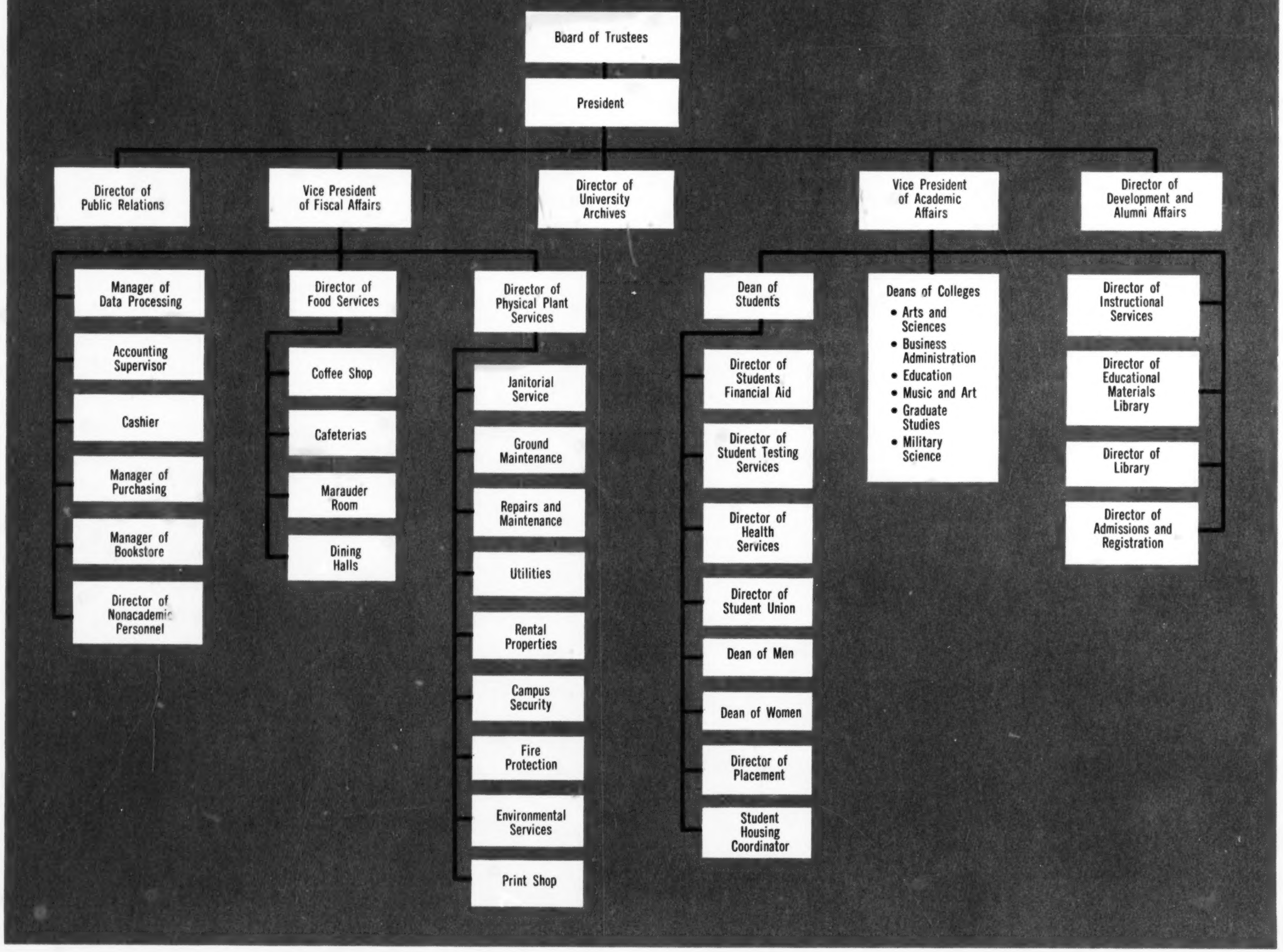
Present Organization Chart — University of Akron


Board of Trustees
President
Vice President for Academic Affairs
Deans of Colleges
• Graduate
• Liberal Arts
• Engineering
• Education
• Business Administration
• Fine and Applied Arts
• Nursing
• Law
• General
• Community-Technical
• Evening
• Off-Campus Programs and Summer Session
University Librarian
Registrar
Director of Center for Information Systems
Director of Instructional Media
Assistant to Vice President
ROTC
Vice President for Planning
University Architect
Assistant to Vice President
Planning and Space Utilization
Dean of Student Services
Testing-Advising
Director of Admissions
Student Housing
Student Activities
Student Financial Aids
Student Placement
Student Center
Health Services
Director of Institutional Research
Assistant to Director
Assistant to President for Development
Special Assistant for Development
Director of Development
Director of University Relations
Alumni Relations
University Publications
University News Service
Radio-TV Information
Sports Information
Controller-Treasurer
Auditor
Assistant Controller
Director of Budget
Office Manager
Vice President for Business and Finance
Director of Physical Plant
Director of Computer Center
Director of Staff Personnel
Director of Purchasing
Security Officer
Auxiliary Enterprises

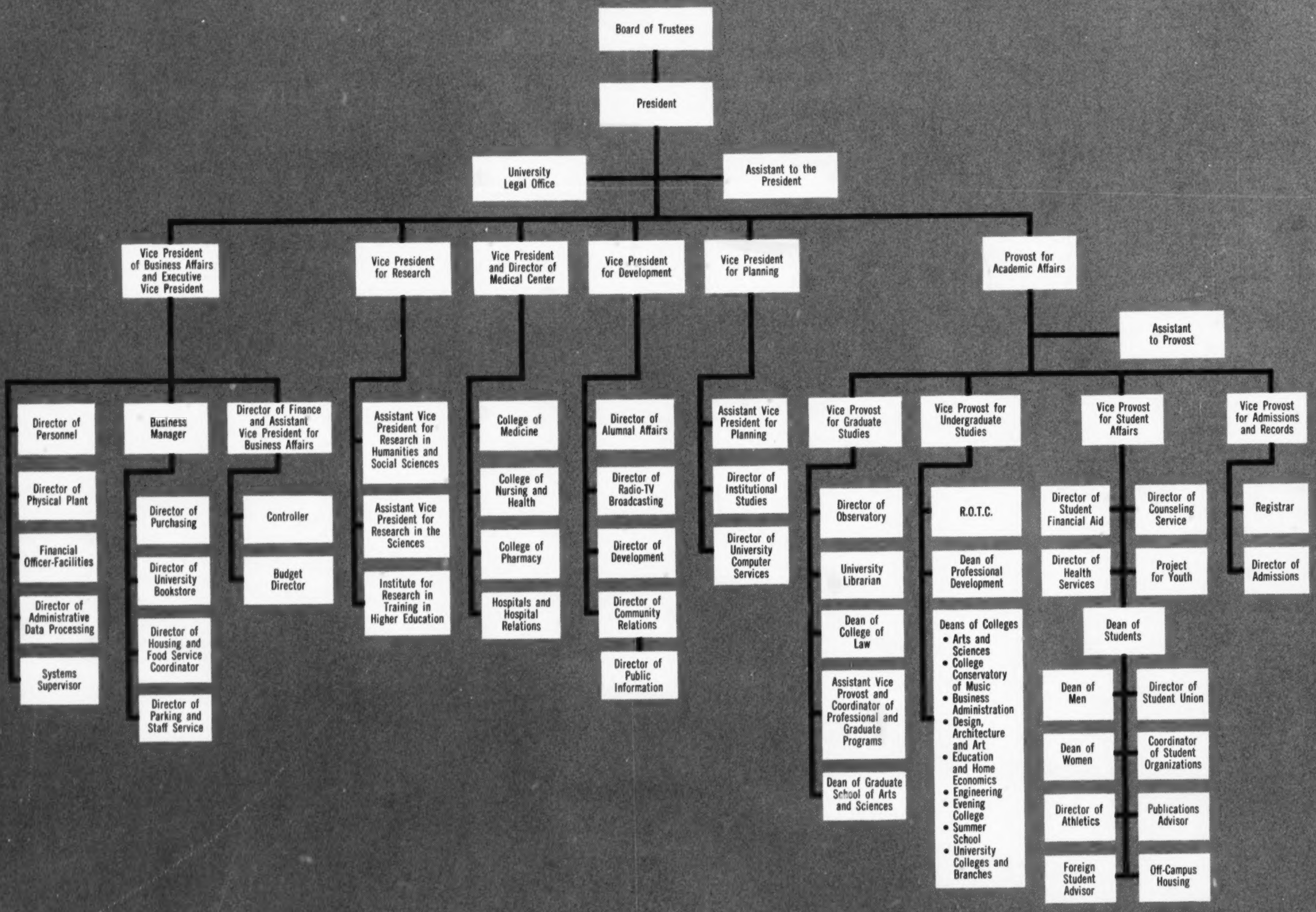
Present Organization Chart — Bowling Green State University


Board of Trustees
President
Assistant to President
Vice President for Academic Affairs
Director of Library
Dean Graduate School
Deans
• Business Administration
• Education
• Liberal Arts
Honors Program
Instructional Media
Registrar
Summer and Off-Campus Programs
Academic Centers
Space Assignments
Branch Campus
Vice President for Student Affairs
International Programs
Director of Admissions
Director of Placement
Director of Counseling Center
Director of Health Center
Dean of Students
Associate Dean of Students Organization and Planning
Associate Dean of Students Standards and Procedures
Associate Dean of Students Programs and Activities
Director of Student Financial Aids
Director of Student Housing
Vice President for Research and Financial Affairs
Director of Procurement
Central Stores
Director of Inventory Control and Special Services
Controller and Business Manager
Assistant Controller
Assistant Business Manager
Supervisor of Payroll
Auditor-Postmaster
Treasurer
Bursar
Assistant to Treasurer
Assistant Treasurer
Vice President for Administration
Chief Security Officer
University Bookstore Manager
Director of Personnel Services
Campus Planning
Building and Facilities
Auxiliary Services
Maintenance
Custodial
Director of University Union
Director of Athletics
Assistant to President and Director of Development
Research Associate Institutional Studies
Director of Alumni and University Relations
Director of News Service and Publications
Assistant to President for Informational Systems
Director of Computational Services

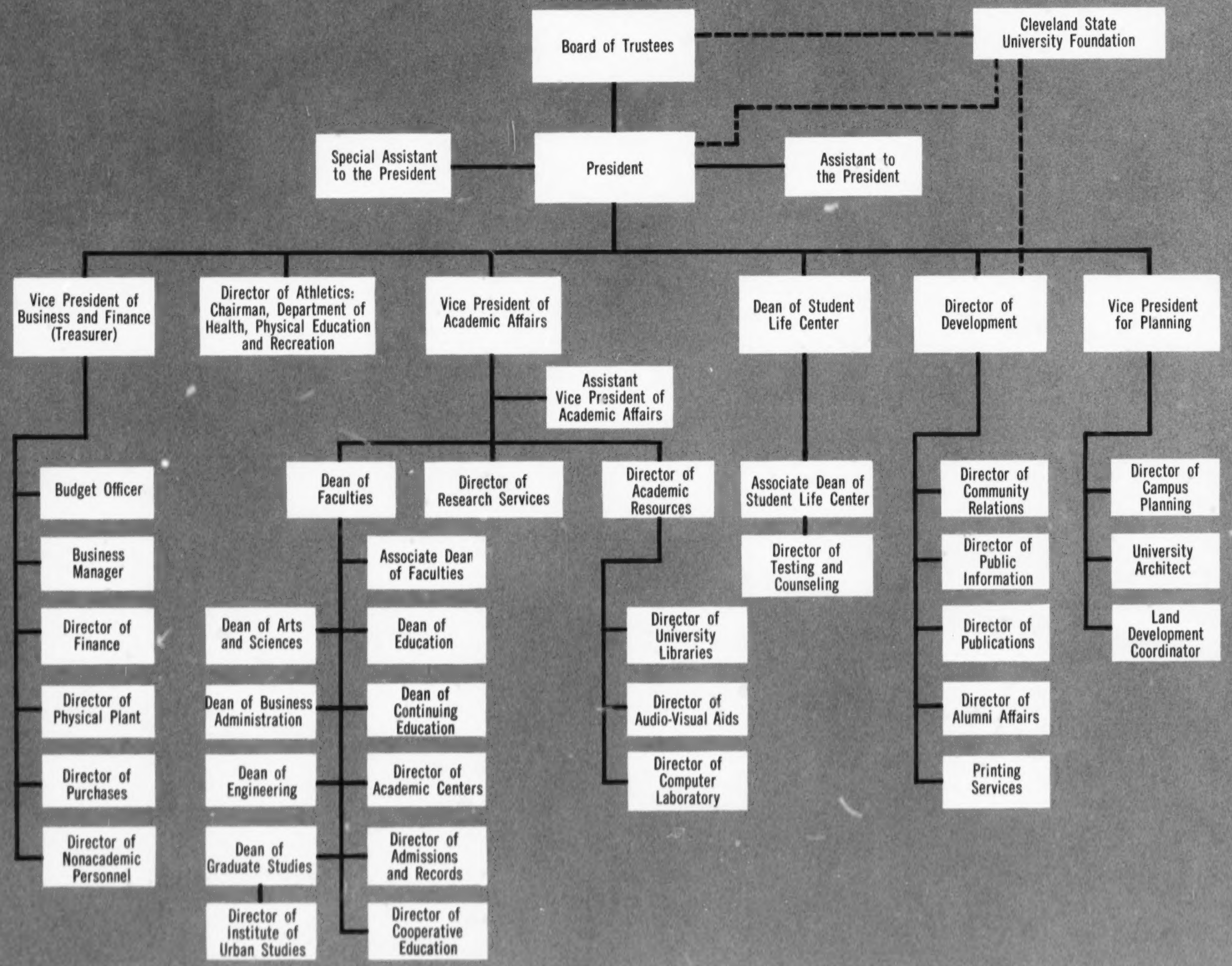
Present Organization Chart—Central State University


Board of Trustees
President
Director of Public Relations
Vice President of Fiscal Affairs
Director of University Archives
Vice President of Academic Affairs
Director of Development and Alumni Affairs
Manager of Data Processing
Accounting Supervisor
Cashier
Manager of Purchasing
Manager of Bookstore
Director of Nonacademic Personnel
Director of Food Services
Coffee Shop
Cafeterias
Marauder Room
Dining Halls
Director of Physical Plant Services
Janitorial Service
Ground Maintenance
Repairs and Maintenance
Utilities
Rental Properties
Campus Security
Fire Protection
Environmental Services
Print Shop
Dean of Students
Director of Students Financial Aid
Director of Student Testing Services
Director of Health Services
Director of Student Union
Dean of Men
Dean of Women
Director of Placement
Student Housing Coordinator
Deans of Colleges
• Arts and Sciences
• Business Administration
• Education
• Music and Art
• Graduate Studies
• Military Science
Director of Instructional Services
Director of Educational Materials Library
Director of Library
Director of Admissions and Registration

Present Organization Chart — University of Cincinnati


Board of Trustees
President
University Legal Office
Assistant to the President
Vice President of Business Affairs and Executive Vice President
Vice President for Research
Vice President and Director of Medical Center
Vice President for Development
Vice President for Planning
Provost for Academic Affairs
Assistant to Provost
Director of Personnel
Director of Physical Plant
Financial Officer-Facilities
Director of Administrative Data Processing
Systems Supervisor
Business Manager
Director of Purchasing
Director of University Bookstore
Director of Housing and Food Service Coordinator
Director of Parking and Staff Service
Director of Finance and Assistant Vice President for Business Affairs
Controller
Budget Director
Assistant Vice President for Research in Humanities and Social Sciences
Assistant Vice President for Research in the Sciences
Institute for Research in Training in Higher Education
College of Medicine
College of Nursing and Health
College of Pharmacy
Hospitals and Hospital Relations
Director of Alumnal Affairs
Director of Radio-TV Broadcasting
Director of Development
Director of Community Relations
Director of Public Information
Assistant Vice President for Planning
Director of Institutional Studies
Director of University Computer Services
Vice Provost for Graduate Studies
Director of Observatory
University Librarian
Dean of College of Law
Assistant Vice Provost and Coordinator of Professional and Graduate Programs
Dean of Graduate School of Arts and Sciences
Vice Provost for Undergraduate Studies
R.O.T.C.
Dean of Professional Development
Deans of Colleges
• Arts and Sciences
• College Conservatory of Music
• Business Administration
• Design, Architecture and Art
• Education and Home Economics
• Engineering
• Evening College
• Summer School
• University Colleges and Branches
Vice Provost for Student Affairs
Director of Student Financial Aid
Director of Counseling Service
Director of Health Services
Project for Youth
Dean of Students
Dean of Men
Director of Student Union
Dean of Women
Coordinator of Student Organizations
Director of Athletics
Publications Advisor
Foreign Student Advisor
Off-Campus Housing
Vice Provost for Admissions and Records
Registrar
Director of Admissions

Present Organization Chart — Cleveland State University


Board of Trustees
Cleveland State University Foundation
Special Assistant to the President
President
Assistant to the President
Vice President of Business and Finance (Treasurer)
Director of Athletics: Chairman, Department of Health, Physical Education and Recreation
Vice President of Academic Affairs
Dean of Student Life Center
Director of Development
Vice President for Planning
Assistant Vice President of Academic Affairs
Budget Officer
Business Manager
Director of Finance
Director of Physical Plant
Director of Purchases
Director of Nonacademic Personnel
Dean of Faculties
Director of Research Services
Director of Academic Resources
Associate Dean of Faculties
Dean of Arts and Sciences
Dean of Education
Dean of Business Administration
Dean of Continuing Education
Dean of Engineering
Director of Academic Centers
Dean of Graduate Studies
Director of Admissions and Records
Director of Institute of Urban Studies
Director of Cooperative Education
Director of University Libraries
Director of Audio-Visual Aids
Director of Computer Laboratory
Associate Dean of Student Life Center
Director of Testing and Counseling
Director of Community Relations
Director of Public Information
Director of Publications
Director of Alumni Affairs
Printing Services
Director of Campus Planning
University Architect
Land Development Coordinator

Present Organization Chart — Ken

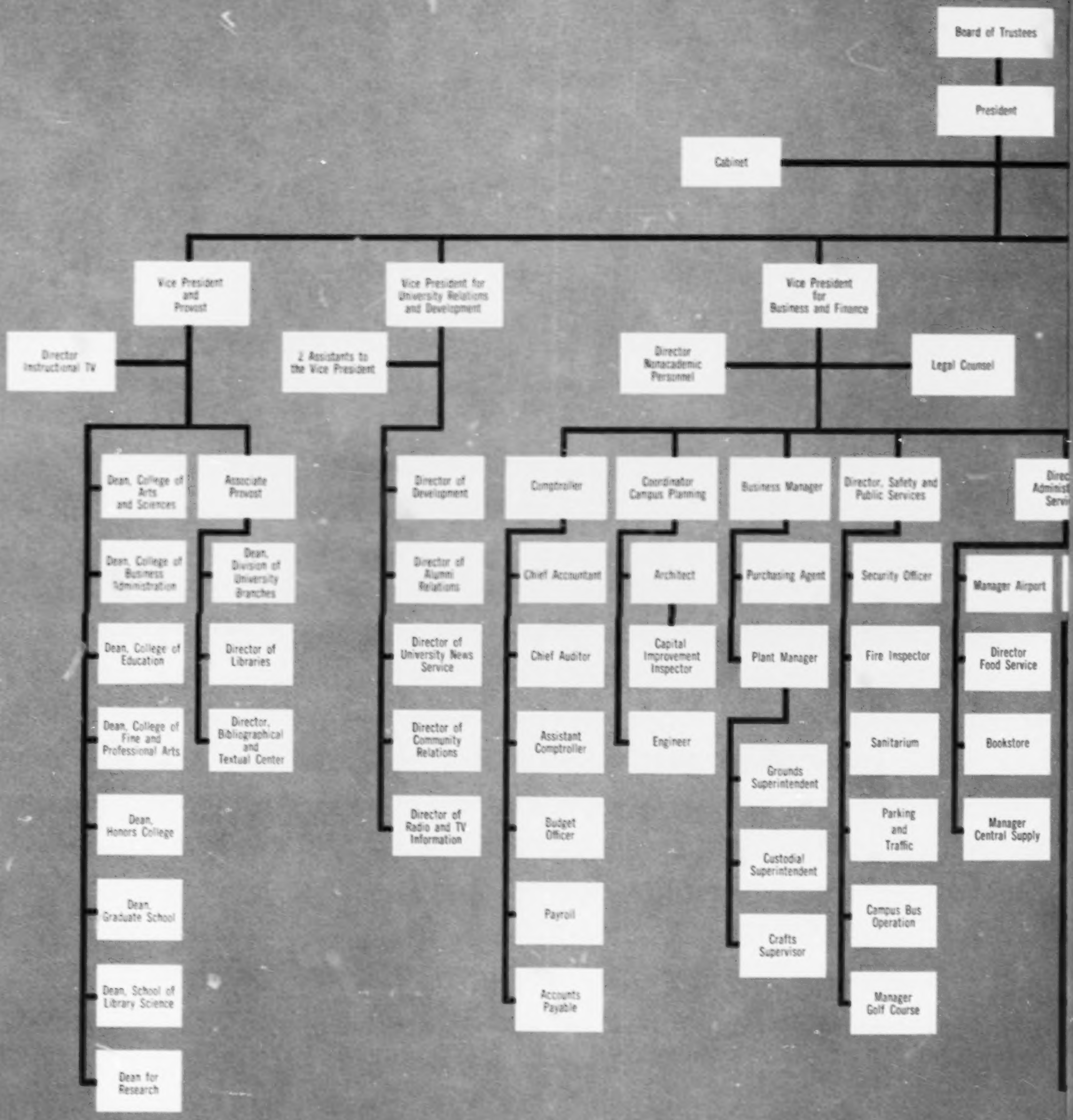
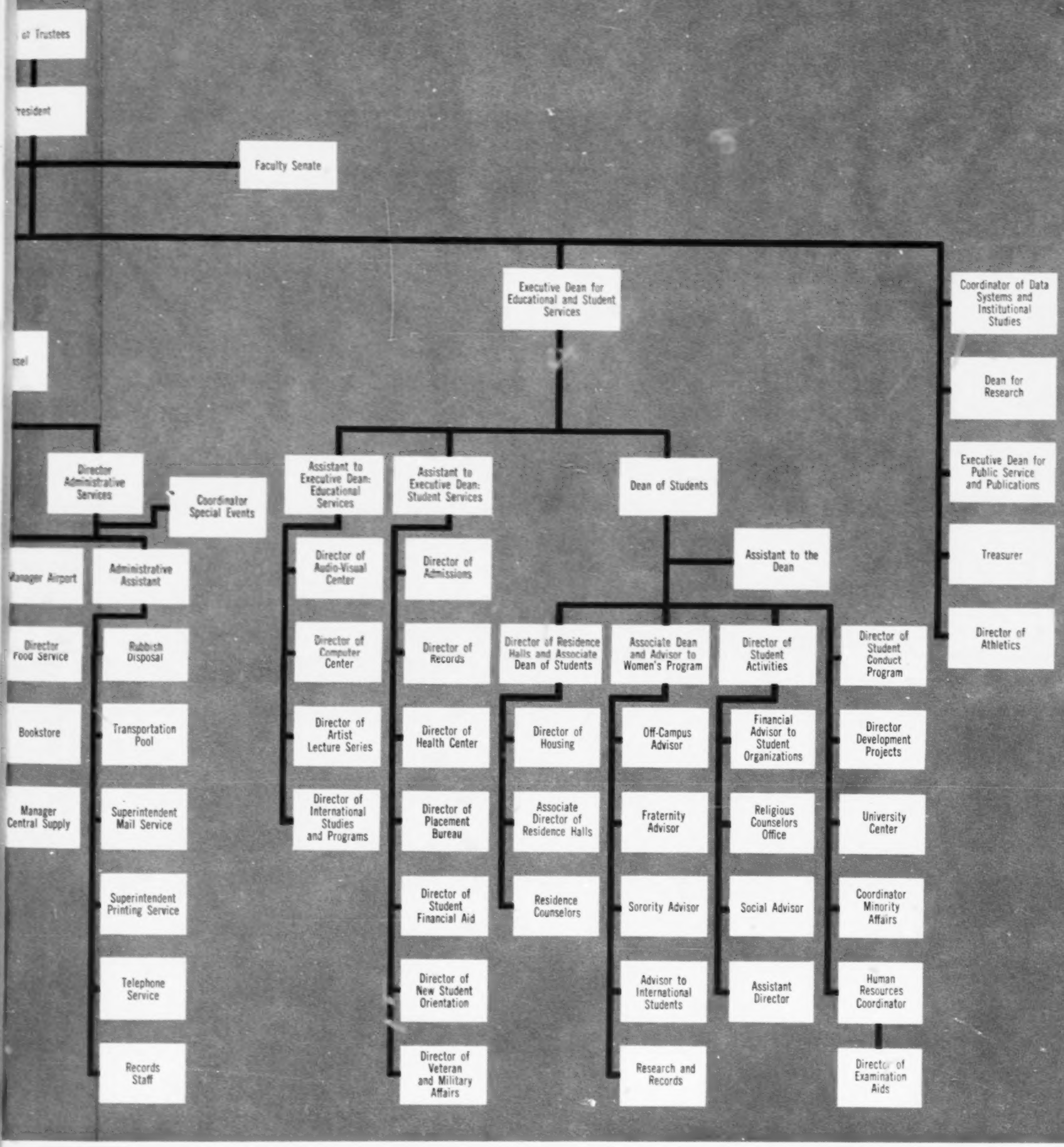
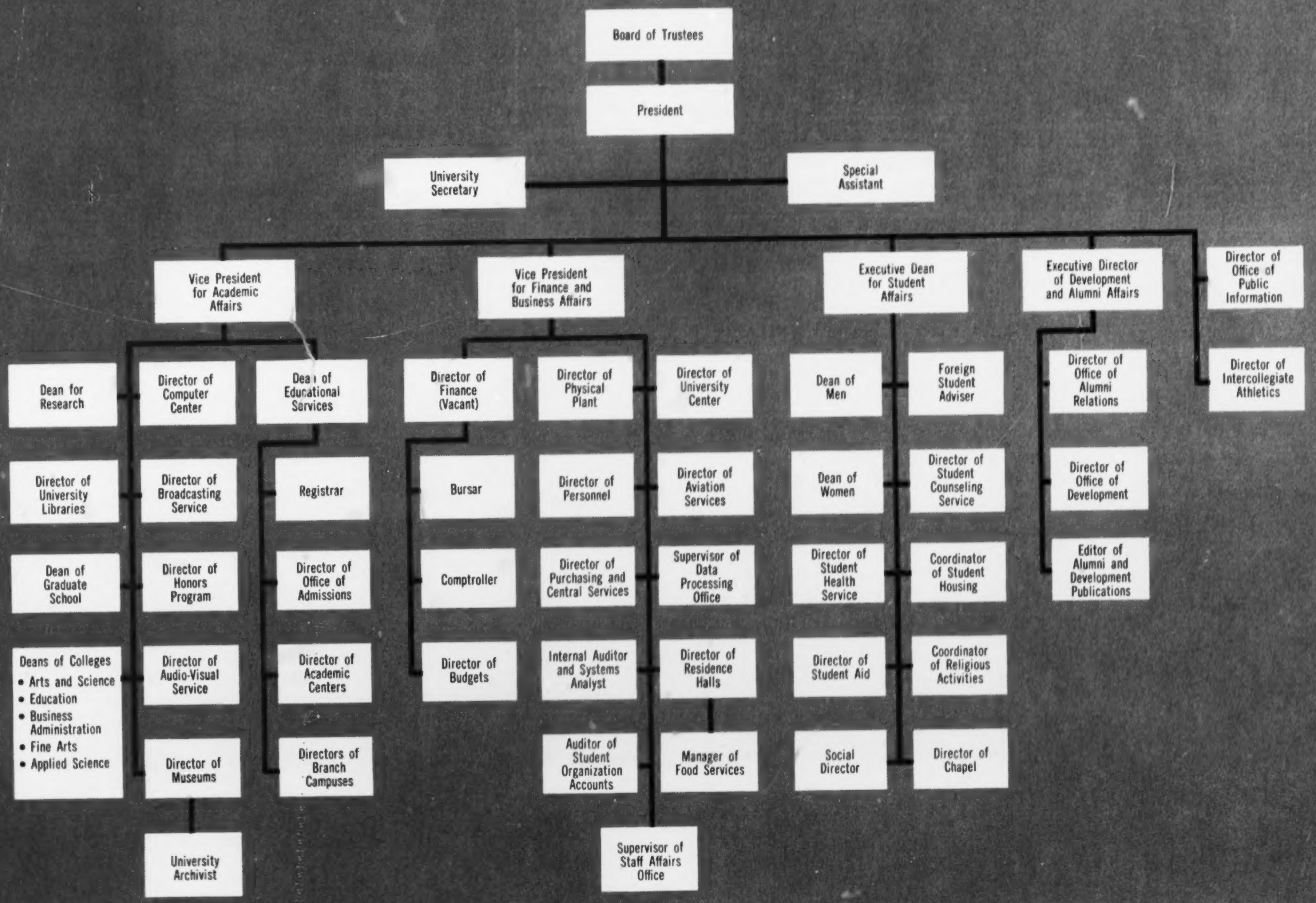

Board of Trustees
President
Cabinet
Vice President and Provost
Director Instructional TV
Dean, College of Arts and Sciences
Dean, College of Business Administration
Dean, College of Education
Dean, College of Fine and Professional Arts
Dean, Honors College
Dean, Graduate School
Dean, School of Library Science
Dean for Research
Associate Provost
Dean, Division of University Branches
Director of Libraries
Director, Bibliographical and Textual Center
Vice President for University Relations and Development
2 Assistants to the Vice President
Director of Development
Director of Alumni Relations
Director of University News Service
Director of Community Relations
Director of Radio and TV Information
Vice President for Business and Finance
Director Nonacademic Personnel
Legal Counsel
Comptroller
Chief Accountant
Chief Auditor
Assistant Comptroller
Budget Officer
Payroll
Accounts Payable
Coordinator Campus Planning
Architect
Capital Improvement Inspector
Engineer
Business Manager
Purchasing Agent
Plant Manager
Grounds Superintendent
Custodial Superintendent
Crafts Supervisor
Director, Safety and Public Services
Security Officer
Fire Inspector
Sanitarium
Parking and Traffic
Campus Bus Operation
Manager Golf Course
Direc Administ Servi
Manager Airport
Director Food Service
Bookstore
Manager Central Supply

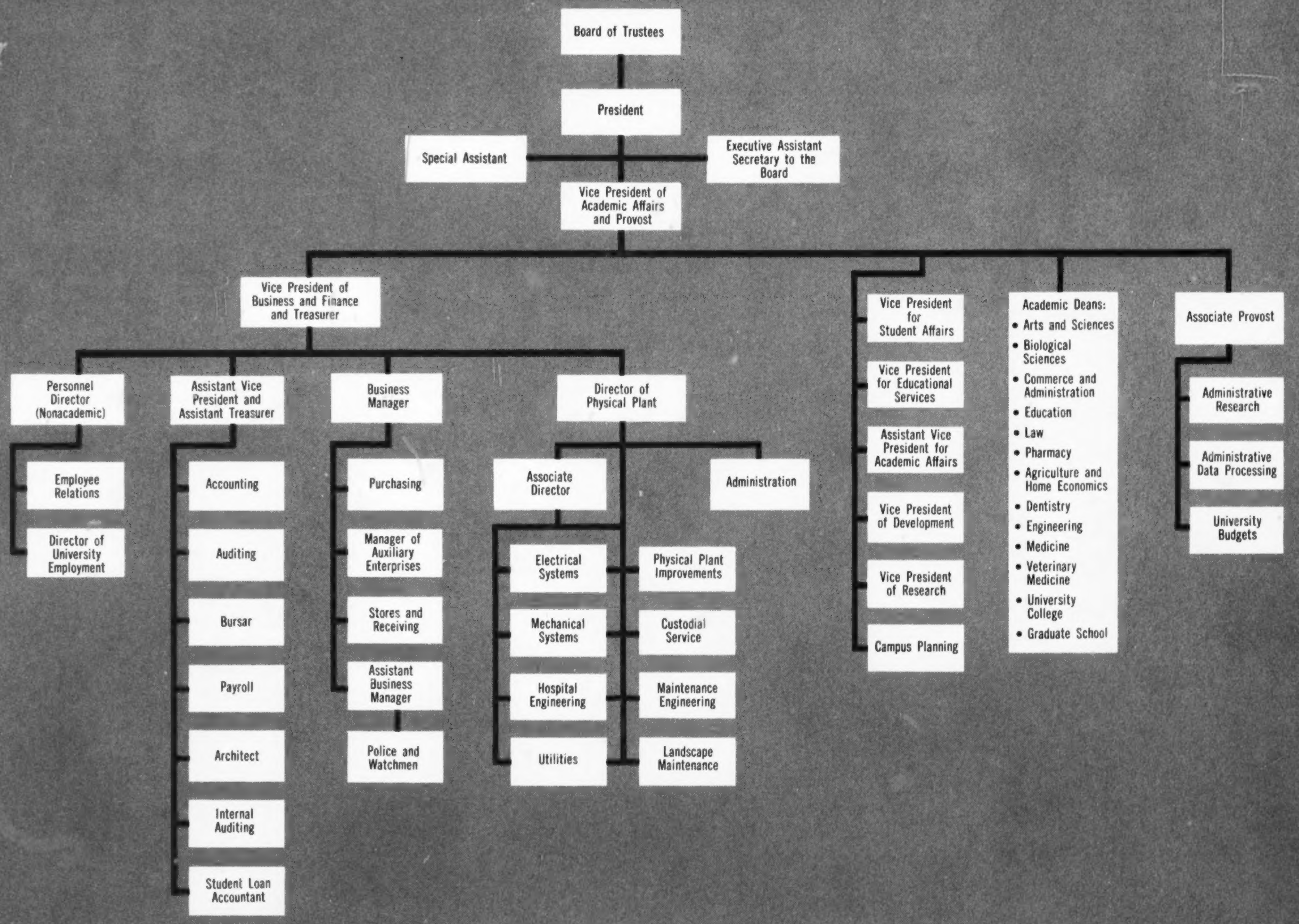
Chart — Kent State University


of Trustees
resident
Faculty Senate
sel
Executive Dean for Educational and Student Services
Coordinator of Data Systems and Institutional Studies
Dean for Research
Executive Dean for Public Service and Publications
Treasurer
Director of Athletics
Director Administrative Services
Coordinator Special Events
Manager Airport
Administrative Assistant
Director Food Service
Bookstore
Manager Central Supply
Rubbish Disposal
Transportation Pool
Superintendent Mail Service
Superintendent Printing Service
Telephone Service
Records Staff
Assistant to Executive Dean: Educational Services
Director of Audio-Visual Center
Director of Computer Center
Director of Artist Lecture Series
Director of International Studies and Programs
Assistant to Executive Dean: Student Services
Director of Admissions
Director of Records
Director of Health Center
Director of Placement Bureau
Director of Student Financial Aid
Director of New Student Orientation
Director of Veteran and Military Affairs
Dean of Students
Assistant to the Dean
Director of Residence Halls and Associate Dean of Students
Director of Housing
Associate Director of Residence Halls
Residence Counselors
Associate Dean and Advisor to Women's Program
Off-Campus Advisor
Fraternity Advisor
Sorority Advisor
Advisor to International Students
Research and Records
Director of Student Activities
Financial Advisor to Student Organizations
Religious Counselors Office
Social Advisor
Assistant Director
Director of Student Conduct Program
Director Development Projects
University Center
Coordinator Minority Affairs
Human Resources Coordinator
Director of Examination Aids

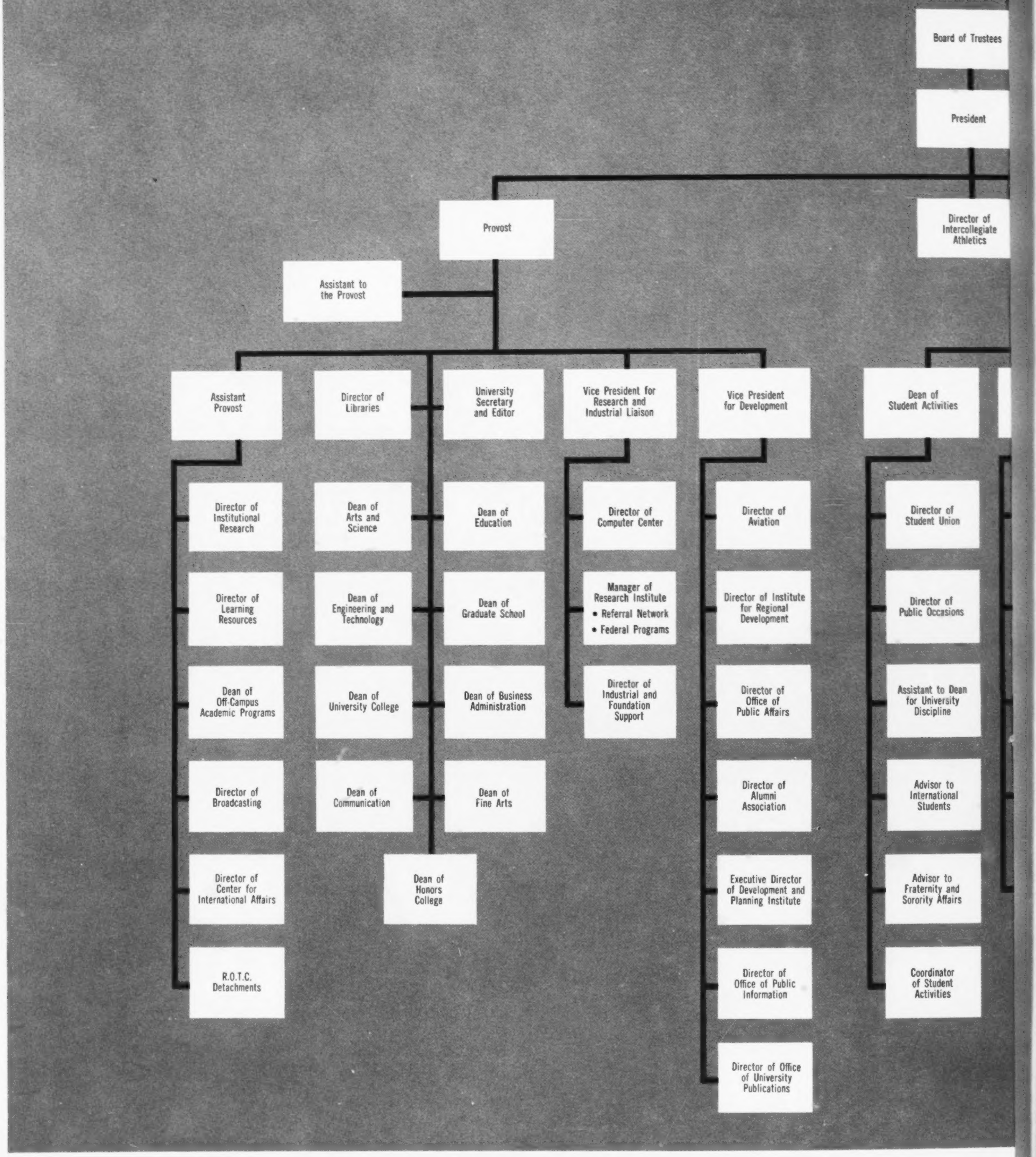
Present Organization Chart — Miami University


Board of Trustees
President
University Secretary
Special Assistant
Vice President for Academic Affairs
Vice President for Finance and Business Affairs
Executive Dean for Student Affairs
Executive Director of Development and Alumni Affairs
Director of Office of Public Information
Director of Intercollegiate Athletics
Dean for Research
Director of University Libraries
Dean of Graduate School
Deans of Colleges
• Arts and Science
• Education
• Business Administration
• Fine Arts
• Applied Science
Director of Computer Center
Director of Broadcasting Service
Director of Honors Program
Director of Audio-Visual Service
Director of Museums
University Archivist
Dean of Educational Services
Registrar
Director of Office of Admissions
Director of Academic Centers
Directors of Branch Campuses
Director of Finance (Vacant)
Bursar
Comptroller
Director of Budgets
Director of Physical Plant
Director of Personnel
Director of Purchasing and Central Services
Internal Auditor and Systems Analyst
Auditor of Student Organization Accounts
Director of University Center
Director of Aviation Services
Supervisor of Data Processing Office
Director of Residence Halls
Manager of Food Services
Supervisor of Staff Affairs Office
Dean of Men
Dean of Women
Director of Student Health Service
Director of Student Aid
Social Director
Foreign Student Adviser
Director of Student Counseling Service
Coordinator of Student Housing
Coordinator of Religious Activities
Director of Chapel
Director of Office of Alumni Relations
Director of Office of Development
Editor of Alumni and Development Publications

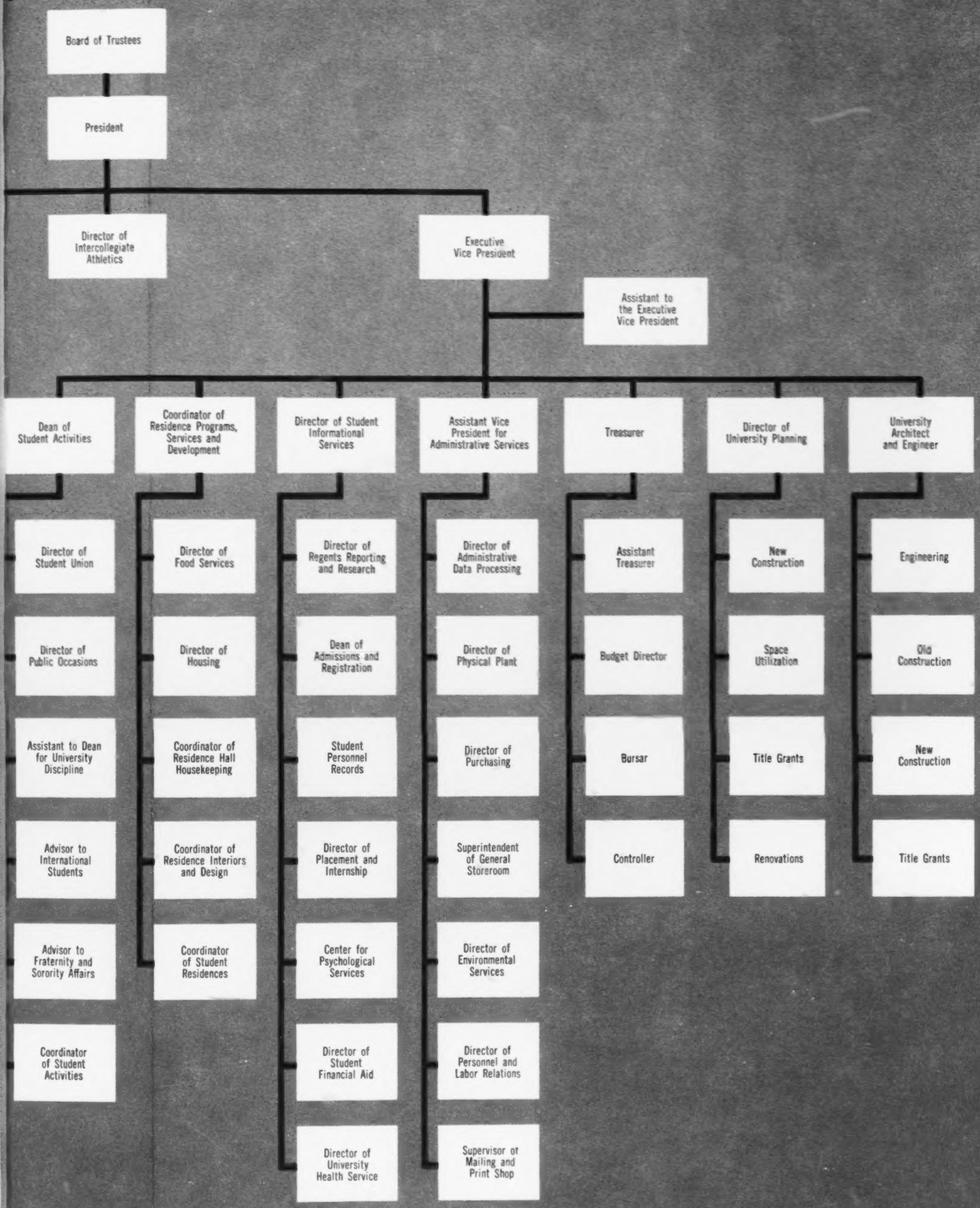
Present Organization Chart—Ohio State University


Board of Trustees
President
Special Assistant
Executive Assistant Secretary to the Board
Vice President of Academic Affairs and Provost
Vice President of Business and Finance and Treasurer
Personnel Director (Nonacademic)
Employee Relations
Director of University Employment
Assistant Vice President and Assistant Treasurer
Accounting
Auditing
Bursar
Payroll
Architect
Internal Auditing
Student Loan Accountant
Business Manager
Purchasing
Manager of Auxiliary Enterprises
Stores and Receiving
Assistant Business Manager
Police and Watchmen
Director of Physical Plant
Associate Director
Administration
Electrical Systems
Mechanical Systems
Hospital Engineering
Utilities
Physical Plant Improvements
Custodial Service
Maintenance Engineering
Landscape Maintenance
Vice President for Student Affairs
Vice President for Educational Services
Assistant Vice President for Academic Affairs
Vice President of Development
Vice President of Research
Campus Planning
Academic Deans:
• Arts and Sciences
• Biological Sciences
• Commerce and Administration
• Education
• Law
• Pharmacy
• Agriculture and Home Economics
• Dentistry
• Engineering
• Medicine
• Veterinary Medicine
• University College
• Graduate School
Associate Provost
Administrative Research
Administrative Data Processing
University Budgets

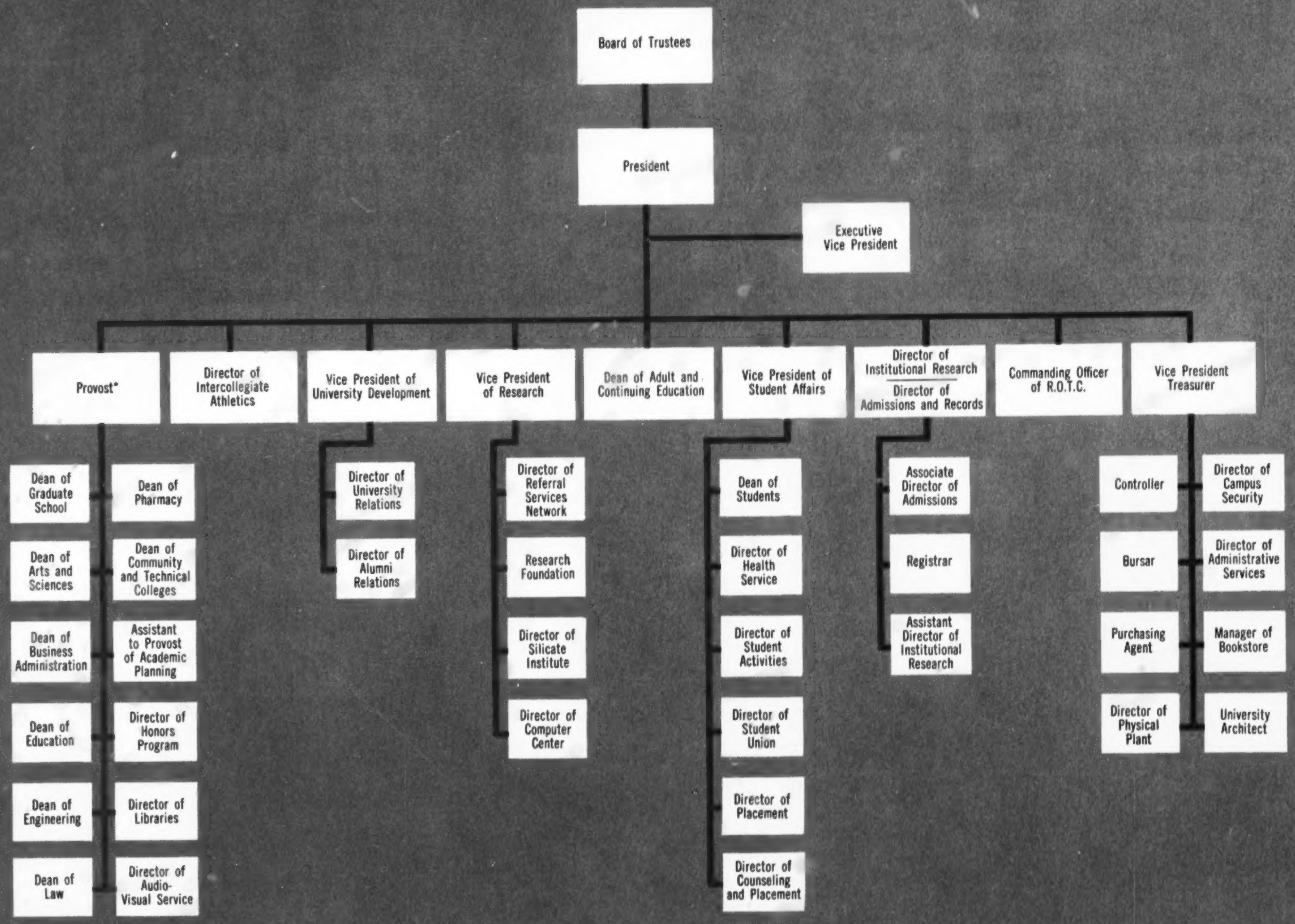
Present Organization Chart — O


Board of Trustees
President
Provost
Director of Intercollegiate Athletics
Assistant to the Provost
Assistant Provost
Director of Libraries
University Secretary and Editor
Vice President for Research and Industrial Liaison
Vice President for Development
Dean of Student Activities
Director of Institutional Research
Director of Learning Resources
Dean of Off-Campus Academic Programs
Director of Broadcasting
Director of Center for International Affairs
R.O.T.C. Detachments
Dean of Arts and Science
Dean of Engineering and Technology
Dean of University College
Dean of Communication
Dean of Education
Dean of Graduate School
Dean of Business Administration
Dean of Fine Arts
Dean of Honors College
Director of Computer Center
Manager of Research Institute
• Referral Network
• Federal Programs
Director of Industrial and Foundation Support
Director of Aviation
Director of Institute for Regional Development
Director of Office of Public Affairs
Director of Alumni Association
Executive Director of Development and Planning Institute
Director of Office of Public Information
Director of Office of University Publications
Director of Student Union
Director of Public Occasions
Assistant to Dean for University Discipline
Advisor to International Students
Advisor to Fraternity and Sorority Affairs
Coordinator of Student Activities

rganization Chart — Ohio University

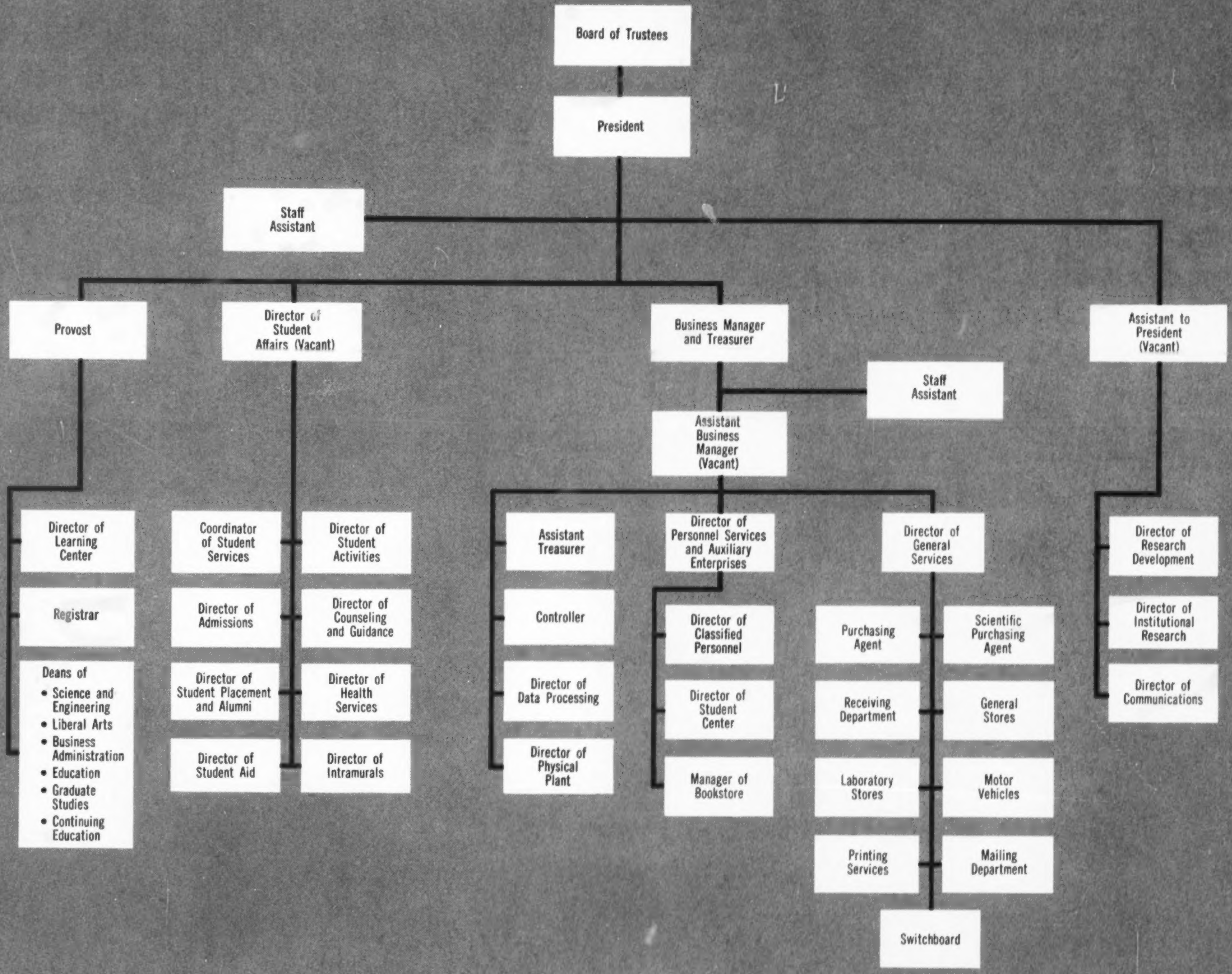

Board of Trustees
President
Director of Intercollegiate Athletics
Executive Vice President
Assistant to the Executive Vice President
Dean of Student Activities
Director of Student Union
Director of Public Occasions
Assistant to Dean for University Discipline
Advisor to International Students
Advisor to Fraternity and Sorority Affairs
Coordinator of Student Activities
Coordinator of Residence Programs, Services and Development
Director of Food Services
Director of Housing
Coordinator of Residence Hall Housekeeping
Coordinator of Residence Interiors and Design
Coordinator of Student Residences
Director of Student Informational Services
Director of Regents Reporting and Research
Dean of Admissions and Registration
Student Personnel Records
Director of Placement and Internship
Center for Psychological Services
Director of Student Financial Aid
Director of University Health Service
Assistant Vice President for Administrative Services
Director of Administrative Data Processing
Director of Physical Plant
Director of Purchasing
Superintendent of General Storeroom
Director of Environmental Services
Director of Personnel and Labor Relations
Supervisor of Mailing and Print Shop
Treasurer
Assistant Treasurer
Budget Director
Bursar
Controller
Director of University Planning
New Construction
Space Utilization
Title Grants
Renovations
University Architect and Engineer
Engineering
Old Construction
New Construction
Title Grants

Present Organization Chart — University of Toledo

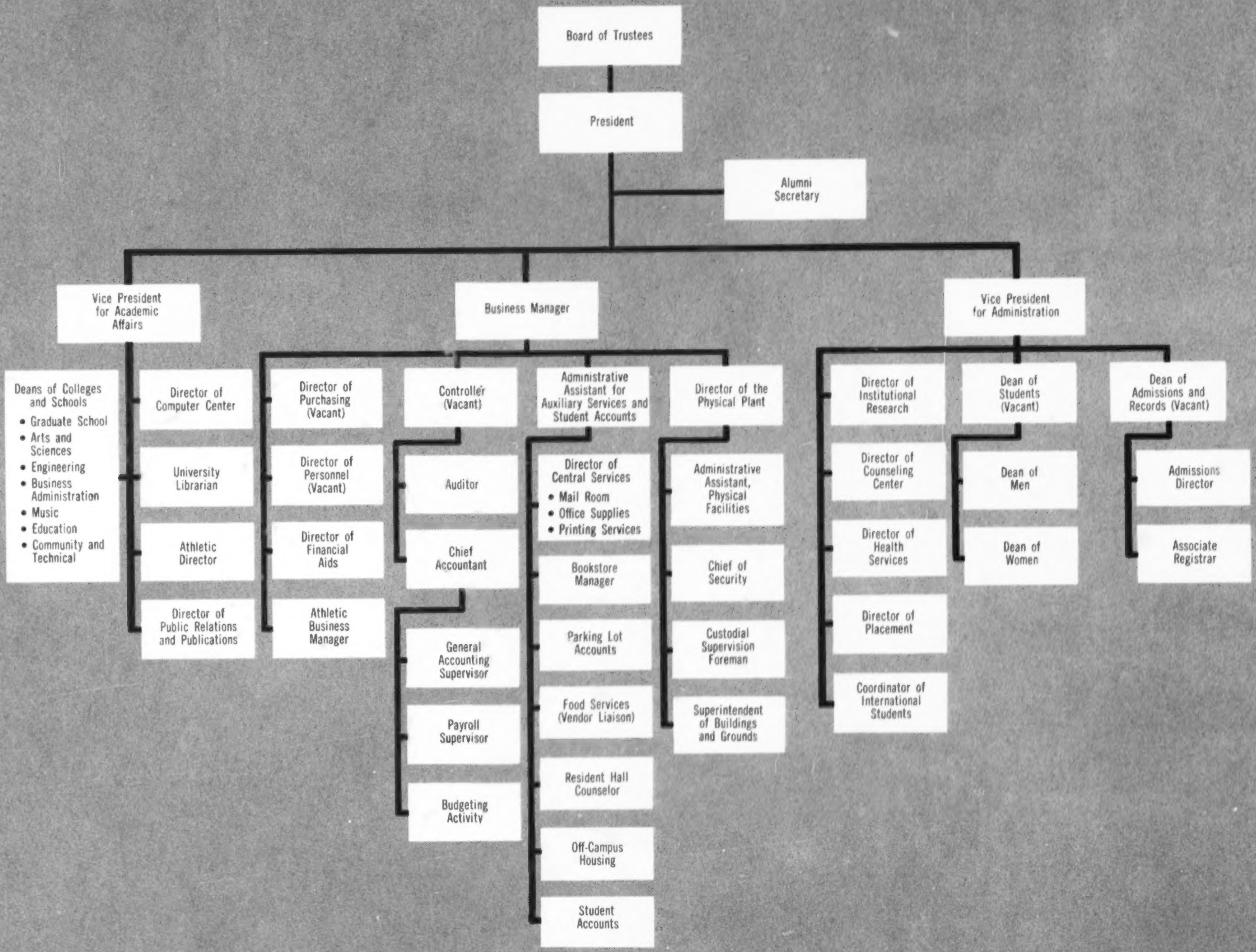

Board of Trustees
President
Executive Vice President
Provost*
Director of Intercollegiate Athletics
Vice President of University Development
Vice President of Research
Dean of Adult and Continuing Education
Vice President of Student Affairs
Director of Institutional Research
Director of Admissions and Records
Commanding Officer of R.O.T.C.
Vice President Treasurer
Dean of Graduate School
Dean of Pharmacy
Dean of Arts and Sciences
Dean of Community and Technical Colleges
Dean of Business Administration
Assistant to Provost of Academic Planning
Dean of Education
Director of Honors Program
Dean of Engineering
Director of Libraries
Dean of Law
Director of Audio-Visual Service
Director of University Relations
Director of Alumni Relations
Director of Referral Services Network
Research Foundation
Director of Silicate Institute
Director of Computer Center
Dean of Students
Director of Health Service
Director of Student Activities
Director of Student Union
Director of Placement
Director of Counseling and Placement
Associate Director of Admissions
Registrar
Assistant Director of Institutional Research
Controller
Director of Campus Security
Bursar
Director of Administrative Services
Purchasing Agent
Manager of Bookstore
Director of Physical Plant
University Architect

* A Vice President of Academic Affairs was appointed to assume responsibility for all academic operations by July 1, [illegible]

Present Organization Chart — Wright State University


Board of Trustees
President
Staff Assistant
Provost
Director of Student Affairs (Vacant)
Business Manager and Treasurer
Assistant to President (Vacant)
Staff Assistant
Assistant Business Manager (Vacant)
Director of Learning Center
Registrar
Deans of
• Science and Engineering
• Liberal Arts
• Business Administration
• Education
• Graduate Studies
• Continuing Education
Coordinator of Student Services
Director of Admissions
Director of Student Placement and Alumni
Director of Student Aid
Director of Student Activities
Director of Counseling and Guidance
Director of Health Services
Director of Intramurals
Assistant Treasurer
Controller
Director of Data Processing
Director of Physical Plant
Director of Personnel Services and Auxiliary Enterprises
Director of Classified Personnel
Director of Student Center
Manager of Bookstore
Director of General Services
Purchasing Agent
Receiving Department
Laboratory Stores
Printing Services
Scientific Purchasing Agent
General Stores
Motor Vehicles
Mailing Department
Switchboard
Director of Research Development
Director of Institutional Research
Director of Communications

Present Organization Chart — Youngstown State University


Board of Trustees
President
Alumni Secretary
Vice President for Academic Affairs
Business Manager
Vice President for Administration
Deans of Colleges and Schools
• Graduate School
• Arts and Sciences
• Engineering
• Business Administration
• Music
• Education
• Community and Technical
Director of Computer Center
University Librarian
Athletic Director
Director of Public Relations and Publications
Director of Purchasing (Vacant)
Director of Personnel (Vacant)
Director of Financial Aids
Athletic Business Manager
Controller (Vacant)
Auditor
Chief Accountant
General Accounting Supervisor
Payroll Supervisor
Budgeting Activity
Administrative Assistant for Auxiliary Services and Student Accounts
Director of Central Services
• Mail Room
• Office Supplies
• Printing Services
Bookstore Manager
Parking Lot Accounts
Food Services (Vendor Liaison)
Resident Hall Counselor
Off-Campus Housing
Student Accounts
Director of the Physical Plant
Administrative Assistant, Physical Facilities
Chief of Security
Custodial Supervision Foreman
Superintendent of Buildings and Grounds
Director of Institutional Research
Director of Counseling Center
Director of Health Services
Director of Placement
Coordinator of International Students
Dean of Students (Vacant)
Dean of Men
Dean of Women
Dean of Admissions and Records (Vacant)
Admissions Director
Associate Registrar